UNITED STATES CIRCUIT COURT OF APPEALS,

FOR THE SEVENTH CIRCUIT.

OCTOBER TERM, A. D. 1891.

No 22.

DAVID BRADLEY MANUFACTURING COMPANY,

Appellant,

vs.

THE EAGLE MANUFACTURING COMPANY,

Appellee.

Appeal from the Circuit Court of the United States for the Northern District of Illinois, Northern Division.

INDEX.

PAGE.

Bond for Costs 2
Bill of Complaint 3
Subpœna 15
Order 16
Order 17
Answer 17
Order 22
Replication 23
Order 24
Amendment to Answer 25
Order 26
Stipulation (agreement) 27
Order 29
Opinion of Judge Blodgett 29
Decree 33
Petition for Appeal 34
Assignment of Errors 35
Order 37
Appeal Bond 38
Order 40
Stipulation 41
Order 45
Complainant's Testimony 46
Deposition of H. L. Brevoort 50
Admission 64
Stipulation 65
Complainant's Exhibit of case against David Bradley & Co 68
Deposition of E. A. Wright 141
" " A. K. Raff 178
" " E. P. Lynch 181
" " G. Watson French 190
Complainant's Exhibit Bradley Final Decree 196
" " Bradley Decree 198
Defendant's Testimony 201
Deposition of Henry N. Dalton 202
" " Wm. S. Bates 217
" " John F. Packer 229
" " Charles A. Hague 238
" " Byron C. Bradley 262
" " Wm. H. Gaede 272
" " J. H. Bradley 282
Vol. "2". Exhibits 302
Certificate of Clerk 401
Stipulation 402

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE NORTHERN DISTRICT OF ILLINOIS, NORTHERN DIVISION.

SATURDAY, November 7, 1891.

Present: Honorable HENRY W. BLODGETT,
District Judge.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

On motion, it is ordered that the time for completing the record on appeal herein be extended thirty days.

NORTHERN DISTRICT OF ILLINOIS,
NORTHERN DIVISION. } ss.

I, William H. Bradley, clerk of the Circuit court of the United States, for said Northern district of Illinois, do hereby certify the above and foregoing to be a true and correct copy of the order entered of record in said court at Chicago, in said division, on the 7th day of November, A. D. 1891, in the cause wherein The Eagle Manufacturing Company is the complainant and David Bradley Manufacturing Company is the defendant, as the same appears from the original records of said court now remaining in my custody and control.

In Testimony whereof, I have hereunto set my hand and affixed the seal of said court, at my office in Chicago, in said district, this 13th day of November, A. D. 1891.

[SEAL] WM. H. BRADLEY,
Clerk.

[Endorsed]: Filed Nov. 13, 1891.

OLIVER T. MORTON, *Clerk.*

IN THE

CIRCUIT COURT OF THE UNITED STATES,

FOR THE NORTHERN DISTRICT OF ILLINOIS,

NORTHERN DIVISION.

THE EAGLE MANUFACTURING COMPANY,

vs.

DAVID BRADLEY MANUFACTURING COMPANY.

} *In Chancery.*

Pleas in the Circuit court of the United States of America, for the Northern district of Illinois, Northern division, held at the United States court rooms in the city of Chicago, in the district aforesaid, before the Honorable Henry W. Blodgett, Judge of the District court of the United States, for the Northern district of Illinois, on Wednesday the 7th day of October, in the adjourned October Term of said court, in the year of our Lord one thousand eight hundred and ninety-one and of our Independence the one hundred and sixteenth year.

WM. H. BRADLEY,
Clerk.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

NORTHERN DISTRICT OF ILLINOIS, ss.

Be it remembered that on the eleventh day of June, 1888, came the complainant by its solicitor and filed in the office of the clerk of the Circuit court of the United States, for the Northern district of Illinois, at Chicago, in said district its bond for costs and bill of complaint in said entitled cause, which said bond and bill are in the words and figures following, to-wit:

Bond for Costs.

United States of America, }
Northern District of Illinois. } ss.

Circuit court, Term, A. D. 188 .

Eagle Mf'g Co.,
v.
The David Bradley Mf'g Co. } *In Chancery.*

Bond for costs, filed June 11, 1888.

I enter myself security for costs in this cause, and promise to pay all costs which may accrue to the opposite party in this action, or to any of the officers of this court, and in default of payment by the complainant of any costs ordered or adjudged to be paid by complainant, hereby agree and stipulate that execution may issue against my property for any costs taxed against complainant.

Dated this 11th day of June, A. D. 1888.

Chas. H. Hawkins,
Phoenix Building.

[Endorsed]: Filed June 11, A. D. 1888.

Wm. H. Bradley, *Clerk.*

CIRCUIT COURT OF THE UNITED STATES, IN AND FOR THE NORTHERN DISTRICT OF ILLINOIS, NORTHERN DIVISION.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company. } *In Equity.*

To the Honorable, the Judges of the Circuit court of the United States, in and for the Northern district of Illinois, Northern division.

The Eagle Manufacturing Company, a corporation, organized and existing under the laws of the state of Iowa, and citizen of said state, brings this bill against The David Bradley Manufacturing Company, a corporation organized and existing under the laws of the state of Illinois, having its principal office and place of business at Chicago, and a citizen of said state of Illinois. And thereupon, your orator complains and says that Edgar A. Wright was the true, original and first inventor of a certain new and useful improvement in Cultivators not known or used before his invention and not, for more than two years prior to the date of application for a patent therefor, in public use or on sale. Bill filed June 11, 1888.

And your orator further shows unto your Honors, that the said Edgar A. Wright so being the inventor of said improvement, and being citizen of the United States aforesaid, made application to the proper department of the Government of the United States for letters patent in accordance with the then existing laws of Congress, and having duly complied in all respects with the conditions and requisitions of said laws on the 7th day of June, 1881, letters patent of the United States No. 242,497, signed, sealed and executed in due form of law, for his invention were issued and delivered to the aforesaid Edgar A. Wright, whereby there was secured to the said Edgar A. Wright and to his heirs, legal representatives and assigns, for the term of seventeen years from the 7th day of June, 1881, the full and exclusive right of making, using and vending to others to be used, the said improvement in Cultivators.

And your orator further shows that a description or specification of the aforesaid improvement was given in the schedule to the aforesaid letters patent annexed, accompanied by certain drawings referred to in said last mentioned schedule and forming part of said letters patent. The said letters patent, and the said specification thereto annexed (which, or an exemplified copy of which your ora-

tor will produce, as your Honors may direct) were duly recorded in the patent office and a copy thereof is hereto annexed marked "Exhibit A."

And your orator further shows that on June 13, 1881, the said Edgar A. Wright sold, transferred and conveyed unto your orator, all his right, title, interest and claim in and to said letters patent No. 242,497, as by said assignment, ready in court to be produced will more fully and at large appear.

And your orator further shows that it commenced suit, by bill in chancery in the Circuit court of the United States, for the Southern district of Iowa, Eastern division, against The Davenport Plow Company, to restrain the said Davenport Plow Company, from making and selling cultivators infringing upon the exclusive rights of the complainant under said letters patent and that the said Davenport Plow Company, filed its answer, denying the validity of said letters patent and any infringement thereof, to which answer a replication was duly filed by the complainant, and thereupon, the parties complainant and defendant proceeded to take their respective proofs and the same having been taken, the cause was heard by the said court on final hearing, and the court having considered the proofs and the arguments of counsel, pro and con, did adjudge and decree that the said letters patent were valid, that the defendant had infringed the same, and did enjoin and restrain the defendant from future infringement thereof, which said decree still remains in full force and unreversed, all of which facts will more fully appear by the records of said court, which, or a certified copy thereof your orator is ready in court to procure at any time, as may by the court be directed, and your orator attaches hereto a certified copy of said decree, marked "Exhibit B."

And your orator further shows that on the day of December, 1887, shortly after the rendition of said decree against the said Davenport Plow Co., it commenced suit, by bill in chancery, against David Bradley & Co., in the Circuit court of the United States for the Southern district of Iowa, to restrain the said David Bradley & Co. from infringing the aforesaid letters patent. That the said David Bradley & Co. is and was a branch house of the David Bradley Manufacturing Company, the defendant herein, and was engaged in selling the identical cultivators manufactured by the defendant herein; that the defendant herein undertook and managed the defense of said suit against its branch house, employing counsel for that purpose and conducting the defense, but it conducted the defense in the name of the said branch house, the defendant named of record. That the defendant herein, answering said bill in the name of the said branch house, denied the validity of said letters patent and any infringement thereof, to which

answer a replication was filed by your orator, and thereupon, your orator and the defendant proceeded to take and took their respective proofs, and the same having been taken, the said cause was heard on final hearing at the May term of said court at Des Moines, A. D. 1888. And the said court having considered the proofs and the arguments of counsel, did adjudge and decree that the said David Bradley & Co. had infringed the aforesaid letters patent, and did enjoin the aforesaid David Bradley & Co. from further infringement thereof, which said decree remains in full force and unreversed, all of which proceedings and things will more fully appear by a certified copy of the records of said court, which your orator is ready at any time to produce in court as may be directed, and your orator attaches hereto a certified copy of said decree marked "Exhibit C."

And your orator further shows that the cultivators sold by the said David Bradley & Co. were made by the defendant herein under letters patent of the United States, No. 243,123, to C. A. Hague, dated June 21, 1881, and No. 270,629, to B. C. Bradley, January 16, 1883, which said patents were issued to the Furst & Bradley Manufacturing Company as assignee of said Hague and Bradley, and passed to the defendant herein, the successor of the said Furst & Bradley Manufacturing Company. The said cultivators as made by the defendant are correctly shown by the drawings in the said letters patent to said B. C. Bradley.

And your orator further shows that suit was also commenced by your orator in the month of December, 1887, in the said Circuit court of the United States, against the Moline, Milburn & Stoddard Company to restrain the infringement of said letters patent; that an answer was filed denying the validity of said letters patent and infringement thereof, to which your orator replied, and thereafter, proofs having been taken by the respective parties, the cause was heard on final hearing, together with the suit against the said David Bradley & Co., at the May term, 1888, of said court, and a decree was rendered, adjudging the said letters patent to be valid, and that the defendant, the said Moline, Milburn & Stoddard Company had infringed the same, and restraining the further infringement thereof.

And your orator further shows that it has extensively applied the said several improvements to practical use, and has been, and but for the infringement hereinafter complained of, and like infringements by others, your orator would still be in the undisturbed possession, use and enjoyment of the exclusive privileges secured by the said letters patent, and in the receipt of the profits of the same.

And your orator further show unto your Honors, as it is informed and believes, that the said defendant herein named, well knowing all the facts hereinbefore set forth, is now constructing, selling and using cultivators which are exactly the same as those sold by David Bradley & Co., as hereinbefore recited, and which said cultivators are in some parts thereof substantially the same in construction and operation as in the said letters patent mentioned, the exclusive right and privilege to make and use which, and vend the same to others to be used, is thus by law vested in your orator.

And so it is may it please your Honors, that the said defendant, as your orator is informed and believes, without the license of your orator against it, will, and in violation of its rights, has made, sold and used, and intends to continue still to make, sell and use the said improvements within the Northern district of Illinois, and elsewhere in the United States, and refuses to pay to your orator any of the profits which it has made by such unlawful manufacture and use, or to desist from the further infringement of said recited letters patent, all of which acts and doings are in violation of the exclusive rights and privileges so as aforesaid vested in your orator under and by virtue of said recited letters patent and are contrary to equity and good conscience, and tend to the manifest injury of your orator in the premises.

And your orator prays that the said defendant may answer the premises, but not under oath, and that it may be decreed to account for and pay over the income or profits thus unlawfully derived, or which might have been derived from the violation of the rights of your orator as aforesaid, and your orator prays that your Honors upon entering of the decree in favor of your orator against said defendant for infringement, as above prayed for, may also proceed to assess, or cause to be assessed, under your directions, as well the profits or income to be derived therefrom, to be accounted for as aforesaid, as also in addition thereto, the damages sustained by your orator by reason of such infringement, and that your Honors may increase the actual damages so assessed to a sum equal to three times the amount of such assessment, under the circumstances of the wilful and unjust infringement committed by said defendant as hereinbefore set forth, and further, that the said defendant may be restrained from any further violation of the rights of your orator as aforesaid, your orator prays that your Honors may grant a writ of injunction issuing from, and under the seal of this Honorable court, or issued by one of your Honors, perpetually enjoining or restraining the said defendant, clerks, attorneys, servants, agents and workmen, from any further construction or sale or use in any manner of said patented improvements, or any part thereof, in violation of the rights of your orator as aforesaid. And your

orator further prays that a provisional or preliminary injunction be issued restraining the said defendant from any further infringement of said recited letters patent pending this cause, and it prays for such other relief as the equity of the case may require and to your Honors may seem meet.

May it please your Honors to grant unto your orator not only a writ or injunction, conformable to the prayer of this bill, but also a writ of subpœna of the United States of America, directed to the said David Bradley Manufacturing Company, commanding it on a day certain, therein to be named, to appear and answer unto this bill of complaint, and to abide and perform such order and decree in the premises as to the court shall seem meet, and may be required by the principles of equity and good conscience.

MATT FRENCH,
Solicitor for Complainant.

W. T. UNDERWOOD,
98 S. Clark Street,
Local Solicitor.

GEO. H. CHRISTY,
Of Counsel.

UNITED STATES OF AMERICA,
SOUTHERN DISTRICT OF IOWA, } ss.
COUNTY OF SCOTT.

Before me, the subscriber, duly authorized to administer oaths, personally came G. Watson French, Vice-President of the Eagle Manufacturing Co., the complainant in the foregoing bill named, who, being duly sworn, deposes and says, that so far as the statements herein contained are within his own knowledge, they are true, and so far as they are derived from the information of others, he verily believes them to be true. And he further says that he verily believes the said Edgar A. Wright, in said bill named, to be the original, true and first inventor of the new and useful improvement which is described in the said letters patent granted to Edgar A. Wright, and mentioned in the foregoing bill. And further, that the said deponent verily believes that the title of the said complainant as is set forth in said bill.

G. WATSON FRENCH.

Sworn and subscribed before me, }
this 9th day of June, A. D. 1888. }

CARL F. HASS, [SEAL]
Notary Public, Scott Co., Ia.

EXHIBIT B.

UNITED STATES CIRCUIT COURT, SOUTHERN DISTRICT OF IOWA, EASTERN DIVISION.

The Eagle Mf'g Co., *Complainant,*
v.
The Davenport Plow Co., *Defendant.*
} *No. 25. Equity.*

June Term, 1887.

DECREE.

This cause came on at this term to be finally heard upon the pleadings and proofs, and was argued by counsel for the respective parties and the pleadings and proofs having been duly considered, it is hereby this 8th day of September, 1887, ordered, adjudged and decreed as follows, viz:

That the letters patent referred to in complainant's bill, being letters patent of the United States, granted unto Edgar A. Wright for improvements in Cultivators, No. 242,497, and dated June 7, 1881, and the letters patent of the United States, granted unto said Edgar A. Wright, dated December 16, 1879, No. 222,767 for improvements in Wheeled Cultivators, are good and valid patents, and the same are not anticipated by the patents offered in evidence by the defendant and described by name and number in the agreed abstract in this cause, and that the said Edgar A. Wright was the first and original inventor of the improvements described and claimed therein, and that the complainant became the owner thereof as alleged in its bill of complaint.

It is also found, ordered, adjudged and decreed that the defendant, by making and vending cultivators such as are shown in defendants Exhibits B 1 and B 2, forming a part of said agreed abstract, infringed upon all the claims of said letters patent No. 242,497 and upon the exclusive rights of the complainant therein and also that in making and vending cultivators with improvements such as are shown in defendants said Exhibit B 1, defendant infringed upon the first, second, third, fourth, sixth and eleventh claims of patent No. 222,767 and upon the exclusive rights of the complainant therein.

And it is further ordered, adjudged and decreed that the defendant be perpetually enjoined and restrained from making, using or selling machines substantially such as are described and claimed in said letters patent No. 242,497 and 222,767 and more particularly such as are shown by the said Exhibits B 1 and B 2, and from doing any act or thing in infringement of said patents, or either of them, or in violation of the exclusive rights of the complainant thereunder.

And it is also ordered, adjudged and decreed that the complainant do recover of the defendant the profits, gains, and advantages that it has derived from the manufacture and sale of the said patented improvements, and also the damages which the complainant has suffered by reason of the said infringement by the defendant.

And it is further ordered, adjudged and decreed that this cause be referred to E. E. Cook, Esq., of Davenport, Iowa, as special master, to ascertain, state and report to the court an account of the aforesaid gains, profits, advantages and damages and the defendant attend upon the accounting and produce its books, vouchers and documents as the master may direct.

And it is further ordered, that the parties and master, may apply upon due notice to the court upon the foot of this decree, for such other and further order of instruction as may be necessary.

And it is further ordered, adjudged and decreed that the complainant recover of the defendant the costs of this trial to be taxed.

(Signed) J. M. LOVE,
Judge.

UNITED STATES OF AMERICA,
SOUTHERN DISTRICT OF IOWA, } ss.
EASTERN DIVISION.

I, H. K. Love, clerk of the Circuit court of the United States in and for the Southern district of Iowa, Eastern division, at Keokuk, do hereby certify that the foregoing writing is a true and correct copy of a decree made and entered in the above entitled cause, as true and correct as appears by the original now on file and of record in my office at Keokuk, in said district and division. I further certify that the annexed papers are full, true and correct copies of the exhibits referred to in the foregoing decree as Exhibits B 1 and B 2 as full, true and correct as appears by the origtnal exhibits now on file in my office at Keokuk, as aforesaid.

In testimony whereof, I have hereunto set my hand and affixed the seal of said Circuit court at my office at Keokuk, in said district and division, this 3rd day of October, A. D. 1887.

[SEAL]

H. K. LOVE,
Clerk.

By ERIE J. LEECH,
Deputy.

EXHIBIT C.

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

I, E. R. Mason, clerk of the said court for said district, do hereby certify that the transcript hereto attached contains a full, true and complete copy of the decree in a certain cause pending in said court wherein The Eagle Manufacturing Company is plaintiff and David Bradley & Company are defendants, as full, true and complete as the original of the same now remains on file and of record in my office.

In testimony whereof, I hereunto subscribe my name and affix the seal of said court, at my office in Des Moines in said district, this 30th day of May, A. D. 1888.

[SEAL] E. R. MASON,

Clerk U. S. Circuit court, Southern District of Iowa.

IN THE CIRCUIT COURT OF THE UNITED STATES, SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

Present: Honorable James M. Love and the Honorable O. P. Shiras, District Judge of the Northern district of Iowa.

The Eagle Manufacturing Company, *Complainant,*
v.
David Bradley & Co., *Defendant.*
} *No. 2,229. In Chancery.*

DECREE.

This cause came on to be finally heard upon the pleadings and proofs and was argued by counsel for the respective parties, and the pleadings and proofs having been duly considered, it is hereby this 23d day of May, 1888, ordered, adjudged and decreed as follows, viz:

That the letters patent referred to in complainant's bill being letters patent of the United States, granted unto Edgar A. Wright, for improvements in cultivators, No. 242,497 and dated June 7, 1881, is a good and valid patent, and that the said Edgar A. Wright was the first and original inventor of the improvements therein described and claimed, and that the said complainant had at the commencement of this cause a good and legal title to said letters patent No. 242,497, as averred in complainant's bill, and that the said defendant has infringed the said patent, and upon the exclusive rights of the complainant under the same, as claimed in the first four claims of said patent.

And it is further ordered, adjudged and decreed that the defendant above named, its servants, agents, operatives and workmen, each and every one of them, be, and they are perpetually enjoined and restrained, from either directly or indirectly making, using or selling to others to be used, cultivators constructed and operated in the manner and upon the principle described in said letters patent of the United States No. 242,497.

And it is further ordered, adjudged and decreed that the complainant recover of the defendant the profits which it has received or made, or which have accrued to it by the use or sale of the improvements described and secured by said letters patent at any and all times since June 7, 1881, and also the damages which the complainant has sustained thereby.

And as it does not appear to the court what said profits and damages are, it is further ordered, adjudged and decreed that this cause be referred to George F. Henry, Esq., a master of this court, to take and report to the court an account of the profits which the defendant has received, or which has arisen or accrued to it from the use or sale of said improvements, and to ascertain and report the damages which the complainant has sustained thereby since June 7, 1881, from the papers and evidence in the cause, and from any evidence which either party may produce before him of the same, and when he shall have taken an account of said profits and assessed said damages, he shall return the same to this court for further action in the premises. And it is further ordered, adjudged and decreed that the complainant on such accounting has the right to cause an examination of the officers, agents and employes of the defendant *ore tenus* or otherwise, and also the production before said master at such time as said master may order of the books, vouchers and documents of the defendant, and that the officers of said defendant attend before said master from time to time within this district as said master shall direct.

And it is further ordered that the question of increase of damages and all other questions be reserved until the coming in of the master's report.

And it is ordered that the parties and master may apply upon the foot of this decree for such other and further order of instruction as may be necessary.

And it is further ordered, adjudged and decreed that the complainant recover of the defendant the costs of this suit to be taxed.

(Signed) J. M. Love,
Judge.

[Endorsed]: *Eagle Mfg. Co.*, v. *David Bradley & Co.* Decree. Filed May 23, 1888.

Ed. R. Mason, *Clerk.*

[Endorsed]: Filed June 11, 1888.

Wm. H. Bradley, *Clerk.*

On the same day, to-wit: On the eleventh day of June, 1888, there issued out of said clerk's office a writ of subpœna in said entitled cause, which said writ, together with the return of the marshal endorsed thereon, is in the words and figures following, to-wit:

SUBPŒNA.

UNITED STATES OF AMERICA,
NORTHERN DISTRICT OF ILLINOIS. } ss.

THE UNITED STATES OF AMERICA,

To the David Bradley Manufacturing Company, a corporation, etc., Greeting:

We command you, that you appear before our Judges of our Circuit court of the United States of America, for the Northern district of Illinois, at Chicago, in said district, on the first Monday in the month of July, next, to answer the bill of complaint of the Eagle Manufacturing Company, this day filed in the clerk's office of said court, in said city of Chicago, then and there to receive and abide by such judgment and decree as shall then or thereafter be made, upon pain of judgment being pronounced against you by default. Subpœna, issued June 11, 1888.

To the Marshal of the Northern district of Illinois to execute.

Witness, the Hon. Samuel F. Miller, acting Chief Justice of the Supreme court of the United States of America, at Chicago, aforesaid, this 11th day of June, in the year of our Lord one thousand eight hundred and eighty-eight, and of our Independence the 112th year.

[SEAL] WM. H. BRADLEY, *Clerk.*

MEMORANDUM.

The above named defendant is notified that unless it shall enter its appearance in the clerk's office of said court, at Chicago, aforesaid, on or before the day to which the above writ is returnable, the complainant's bill will be taken against it as confessed and a decree entered accordingly.

WM. H. BRADLEY, *Clerk.*

MARSHAL'S RETURN.

I have served the within writ within my district in the following manner, to-wit: Upon The David Bradley Manufacturing Company, a corporation, etc., therein named, on the 12th day of June, A. D. 1888, by personally delivering to David Bradley, the president of the aforesaid company, a true copy of the same, on the aforesaid day.

F. H. MARSH,
U. S. Marshal,

By IRA BARCHARD,
Deputy.

[Endorsed]: Filed June 12, A. D. 1888.

WM. H. BRADLEY, *Clerk.*

Afterward, to-wit: On the twenty-fifth day of June, in the adjourned May term of said court, 1888, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

Order, entered June 25, 1888.

Now come the parties, by their solicitors, and the complainant's motion for a preliminary injunction now coming on to be heard, the defendant, by its solicitor, moves to continue the hearing on said motion. After hearing arguments on defendant's motion the same is sustained, and the hearing on complainant's motion is postponed until next Monday.

Afterward, to-wit: On the second day of July, in the July term of said court, 1888, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

Now come the parties, by their solicitors, and the complainant's motion for a preliminary injunction comes on to be heard, and, after hearing the arguments of counsel, the court takes the same under advisement. Order, entered July 2, 1888.

On the same day, to-wit: On the second day of July, 1888, came the defendant, by its solicitors, and filed in said clerk's office its answer to the bill in said entitled cause, which said answer is in the words and figures following, to-wit:

ANSWER.

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

IN EQUITY.

The answer of the David Bradley Manufacturing Company, defendant, to the bill of complaint of The Eagle Manufacturing Company, complainant.

This defendant now and at all times hereafter, saving and reserving to itself, all benefit and advantages of exception which may be had or taken to the many errors, uncertainties, and insufficiences in the com- Answer, filed July 2, 1888.

plainant's said bill of complaint contained, for answer thereunto, or unto so much or such parts thereof as this defendant is advised is material or necessary for it to make answer unto, answering, says as follows:

First: This defendant answering, admits that letters patent of the United States, No. 242,497, dated June 7, 1881, were granted and issued to Edgar A. Wright, substantially as in said bill alleged, except that it does not admit that said Edgar A. Wright was the true, original and first inventor of the matters and things shown, described and claimed in said letters patent, as alleged in said bill.

Second: This defendant, further answering, avers that it has no knowledge, save that derived from the bill, relative to the assignment of said letters patent to the complainant herein and therefore can neither admit nor deny the allegation of the bill relative thereto.

Third: This defendant, further answering, avers that it has no knowledge or information, save that derived from the bill, relative to a suit by the complainant against the Davenport Plow Company, set forth in the bill, nor as to the sustaining and holding valid the said letters patent and can neither admit nor deny the allegation of the bill relative thereto, and this defendant, says that it has no knowledge as to whether a defense was made in the said suit against the Davenport Plow Company, or as to whether any contest was made as to the validity of said letters patent No. 242,497, but this defendant avers, upon information and belief, that the result of said suit against the said Davenport Plow Company has no bearing or effect as to any supposed infringement of said letters patent by this defendant, and this defendant is informed and believes that it has new matter in defense as to the originality of said supposed invention and the validity of said letters patent No. 242,497.

Fourth: This defendant, further answering, admits that a suit was commenced by the Eagle Manufacturing Company, the complainant herein against David Bradley & Co., in the Circuit court of the United States, for the Southern district of Iowa, substantially as in said bill alleged. They admit that said David Bradley & Co. was and is a separate corporation and in part a branch house or agency of this defendant, and was engaged in selling with other machinery, cultivators manufactured by this defendant.

They admit that said suit was to a certain extent defended by this defendant. They admit that pleadings were filed and proofs taken, as set forth in said bill.

Fifth: This defendant, further answering, admits that said last named suit was heard at the time and place alleged in said bill and that a decree was rendered adjudging that said David Bradley & Co.

had infringed the said letters patent No. 242,497 and that the said David Bradley & Co. was enjoined from further infringement thereof, but this defendant avers that in said cause, the finding of the court was against the defendant largely if not wholly by reason of the said court not understanding the operation of a machine shown in one of the patents set up as anticipating the supposed invention of complainant's patent, to-wit: The Dalton patent of 1869, and this defendant has reason to believe and does believe that if the court had fully understood the machine of said patent the finding and decree would have been different.

Sixth: This defendant, further answering, admits that the cultivator sold by the said David Bradley & Co. were made by this defendant under and in accordance with letters patent of the United States, No. 243,123, dated June 21, 1881, to C. A. Hague, and No. 270,629, dated January 16, 1883, to B. C. Bradley.

Seventh: This defendant, further answering, admits upon information and belief, the allegations of the bill relative to a suit by this complainant against the Moline, Milburn & Stoddard Company.

Eighth: This defendant, further answering, avers that it has no knowledge as to the application of the said several improvements to practical use by the complainant, but avers, upon information and belief, that the complainant has never applied the supposed invention, as shown, described and claimed in said letters patent to practical use; and this defendant, further answering, denies, that it has ever in any manner disturbed the possession, use and enjoyment of any supposed privilege of the complainant under said letters patent. This defendant, avers upon information and belief that the said supposed improvements shown, described and claimed in said letters patent No. 242,497 are of no practical use, and have been abondoned by said complainant and by others attempting to use said supposed improvements.

Ninth: This defendant, further answering, admits that it is now constructing, selling and using cultivators which are exactly the same as those sold by said David Bradley & Co., but it denies that said cultivators are in some parts thereof substantially the same in construction and operation as in the said letters patent sued on.

Tenth: This defendant, further answering, avers upon information and belief, that the matters and things shown, described and claimed in said letters patent No. 242,497, are fully shown and described in prior letters patent of the United States, granted to said Edgar A. Wright, dated December 16, 1879, No. 222,767 and avers upon information and belief, that in view of the said prior patent No. 222,767, granted to said Edgar A. Wright, the said letters patent No. 242,497 are void in whole or in part.

Eleventh: This defendant, further answering, denies upon information and belief that the said Edgar A. Wright was the true, original and first inventor of the matters and things described and claimed in said letters patent No. 242,497, and this defendant, avers that long prior to the supposed invention by the said Edgar A. Wright, the same matters and things, or some substantial and material part or parts thereof were shown and described in letters patent of the United States as follows, to-wit:

No. 95,437, dated October 5, 1869, granted and issued to H. N. Dalton, for spring for Gang Plows.

No. 132,910, dated November 12, 1872, granted and issued to C. Kewin, for Gang Plow.

No. 190,816, dated May 15, 1877, granted and issued to W. P. Brown, for coupling for cultivators.

No. 200,955, dated March 5, 1878, granted and issued to P. J. Ward, for cultivators.

No. 222,767; dated December 16, 1879, granted and issued to E. A. Wright, for wheel cultivator.

Twelfth: This defendant, further answering, avers upon information and belief that long prior to the supposed invention by the said Edgar A. Wright, of the matters and things shown, described and claimed in said letters patent No. 242,497, the same matters and things were known to H. N. Dalton, of West Oakland, state of California, and used by him at said West Oakland and at other places in the state of California. Also, so known to Martin L. Kissell, of Springfield, state of Ohio, and used by him at said Springfield.

Thirteenth: This defendant, further answering, avers upon information and belief, that if the said supposed invention of the said Edgar A. Wright is to be construed as now contended for by the complainant herein, the said letters patent is void upon its face when considered in relation to the said prior patent, No. 222,767 to said Edgar A. Wright; and further answering, this defendant avers upon information and belief that in view of the state of the art as it existed at the date of the said supposed invention by said Edgar A. Wright of the matters and things shown and described in said letters patent, No. 242,497, it did not require invention to produce the said supposed invention of the said Edgar A. Wright.

Fourteenth: This defendant, further answering, denies upon information and belief, that it has at any time sold within the Northern district of Illinois, or elsewhere in the United States, any cultivators containing the supposed improvements, or any material and substantial part or parts thereof, shown and described in said letters patent No. 242,497, and this defendant denies that it is now selling and intends to continue to sell any spring cultivators in some parts thereof, substantially the same in construction and operation as in said letters

patent, No. 242,497 mentioned; and this defendant denies that it has ever violated in any way any supposed exclusive rights and privileges of the complainant under said letters patent No. 242,497.

Fifteenth: This defendant, further answering, avers that the cultivators manufactured and sold by it and which it is charged are in infringement of the rights of the complainant under said letters patent No. 242,497 were manufactured under and in accordance with said letters patent of the United States, No. 243,123, dated June 21, 1881, granted to Charles A. Hague, assignor, etc., and No. 270,629, dated January 16, 1883, granted to Byron C. Bradley, assignor, etc., both of which letters patent, this defendant has the right to use.

Without this, that any other matter or thing not herein and hereby well and sufficiently answered unto, confessed and avoided, traversed or denied is true to the knowledge and belief of this defendant.

All which matters and things this defendant is ready to aver, maintain and prove as this Honorable court shall direct, and humbly prays to be hence dismissed with its reasonable costs and charges in that behalf most wrongfully sustained.

[SEAL] DAVID BRADLEY MANUFACTURING CO.,

J. HARLEY BRADLEY,

Secretary and Treasurer.

WEST & BOND,

Solicitors and of Counsel.

STATE OF ILLINOIS, } ss.
COUNTY OF COOK. }

J. Harley Bradley, being first duly sworn, deposes and says that he is the secretary and treasurer of the David Bradley Manufacturing Company, the defendant in the foregoing answer named; that he has read the said answer and knows the contents thereof, and that the same is true, except as to such matters and things therein stated to be upon information and belief, and as to such matters and things he believes them to be true.

J. HARLEY BRADLEY.

Subscribed and sworn to before me, }
this 30th day of June, 1888. }

[SEAL] HARRY T. JONES,
Notary Public.

[Endorsed]: Filed July 2, 1888.

WM. H. BRADLEY, *Clerk.*

Afterward, to-wit: On the sixth day of July, in the July term of said court, 1888, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

The Eagle Manufacturing Company, }
v. } *In Chancery.*
The David Bradley Manufacturing Company. }

Order, entered July 6, 1888.

The court having considered and being now fully advised upon the motion of the complainant for an injunction herein as prayed, sustains said motion, and now orders that said defendant be enjoined and restrained, as prayed for in the bill of complaint filed in this cause, and that a writ of injunction issue for that purpose, unless said defendant shall, on or before the sixteenth day of July, instant, file a stipulation herein with security to be approved by the court to pay all damages that may be adjudged to said complainant for infringement of his patent named in said bill by said defendant.

Afterward, to-wit: On the second day of August, 1888, came the complainant, by its solicitor, and filed in said clerk's office its replication to the answer of the defendant in said entitled cause, which said replication is in the words and figures following, to-wit:

Replication.

Circuit Court of the United States, for the Northern District of Illinois.

The Eagle Manufacturing Co.,
v.
The David Bradley Manufacturing Co. } *In Equity.*

This repliant, saving and reserving unto itself all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto, saith, that it will aver and prove his said bill to be true, certain and sufficient in law to be answered unto; and that the said answer of the said defendant is uncertain, untrue and insufficient to be replied unto by this repliant without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be ready to aver and prove as this Honorable court shall direct, and humbly prays, as in and by its said bill it hath already prayed.

Replication, filed August 2, 1888.

Nath. French,
Solicitor for Complainant.

[Endorsed]: Filed Aug. 2d, '88.

Wm. H. Bradley, *Clerk.*

Afterward, to-wit: On the sixth day of February, 1889, in the December term of said court, 1888, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

Order, entered Feb. 6, 1889.

On motion of West & Bond leave is given them to file an amendment to the defendant's answer herein.

On the same day, to-wit: On the sixth day of February, 1889, came the defendant, by its solicitors, and filed in said clerk's office its amendment to answer in said entitled cause, which said amendment is in the words and figures following, to-wit:

AMENDMENT TO ANSWER.

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Equity.*

Amendment to answer, filed February 6, 1889.

And now comes the said defendant, and by leave of the court first had and obtained, amends its answer heretofore filed in the above entitled cause, as follows:

By adding at the bottom of the twelfth clause of said answer, on page 8, the following: "Also, so known to Charles A. Hague, of New York, New York, and used by him at Chicago, Illinois, in the shops of the Furst & Bradley Manufacturing Company, now the David Bradley Manufacturing Company."

DAVID BRADLEY MANUFACTURING CO.,
By WEST & BOND,
Solicitors.

February 6, 1889, complainant's counsel consent to filing of this amendment, the replication already filed to stand as a replication thereto.

NATH. FRENCH,
For Complainant.

[Endorsed]: Filed Feby. 6, 1889.

WM. H. BRADLEY, *Clerk.*

Afterward, to-wit: On the third day of February, 1891, in the December term of said court, 1890, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company. } *In Chancery,*

Order, entered Feb. 3, 1891.

Now come the parties, by their solicitor, and this cause being set for hearing this day, now comes on to be heard upon pleadings and proofs, and, after hearing the arguments of counsel in part, further hearing herein is hereby postponed until tomorrow morning.

On the same day, to-wit: On the third day of February, 1891, there was filed in said clerk's office a stipulation in said entitled cause, which said stipulation is in the words and figures following, to-wit:

AGREEMENT.

Agreement, filed February 3, 1891.

It is hereby mutually agreed by and between the Eagle Manufacturing Co. and the David Bradley Manufacturing Co. on this 25th day of September, 1889, as follows, to-wit:

The said Eagle Manufacturing Co. may cause the master in the case of *Eagle Manufacturing Co.* v. *David Bradley & Company*, pending at Des Moines, Iowa, in the United States Circuit court for the Southern district of Iowa, to return to the court the annexed report, and the said report and the action of the court thereon shall not be, or be claimed by the said David Bradley Manufacturing Co. to be a bar to the recovery by the Eagle Manufacturing Co. of the said David Bradley Manufacturing Co. of all damages and profits, if any, arising from the sale of the cultivators by the said David Bradley & Co. in violation of letters patent 242,497, to E. A. Wright, and by him assigned to the Eagle Manufacturing Co.

DAVID BRADLEY MANUFACTURING CO.,

By WEST & BOND,

Solicitors.

EAGLE MANUFACTURING CO.,

By MATT FRENCH,

Solicitor.

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE SOUTHERN DISTRICT OF IOWA.

The Eagle Manufacturing Company,
v.
David Bradley & Company.

REPORT OF MASTER.

To the Honorable the Judges of said court:

Master's report filed February 3, 1891.

George F. Henry, to whom said cause was referred as master to ascertain and report the complainant's damages, respectfully shows that the complainant has already brought suit against the manufacturer of the cultivators which were sold by the defendant, electing to recover in full of said manufacturer all profits and damages arising from the sales by the defendant herein, as well as other profits and damages, and for that reason will offer no proofs of profits and damages in this cause.

Accordingly the master reports that the complainant is entitled to recover the sum of one cent nominal damages and costs.

Master's fees

[Endorsed]: Filed Feb. 3, 1891.

WM. H. BRADLEY, *Clerk.*

Afterward, to-wit: On the fourth day of February, 1891, in the December Term of said court, 1890, in the record of the proceedings thereof in said entitled cause, before Honorable Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company. } *In Chancery.*

Order, entered Feb. 4, 1891.

Now again come the parties, by their solicitors and this cause again comes on to be heard upon pleadings and proofs, and after hearing the concluding arguments of counsel the court takes the same under advisement.

Afterward, to-wit: On the thirteenth day of July, 1891, there was filed in said clerk's office, the opinion of Judge Blodgett in said entitled cause, which said opinion is in the words and figures followin, to-wit:

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company.

BLODGETT, J.

Opinion, filed July 13, 1891.

This is a bill for injunction and accounting by reason of the alleged infringement by defendant of letters patent No. 242,497, granted June 7, 1881, to E. A. Wright, for a "Cultivator."

The invention covered by this patent, consists of a peculiar spring, so arranged and adjusted with the operative parts of the machine, that it will aid in lifting the cultivator-beams or plow-beams, out of the ground, with an increasing force as the cultivator rises, rather than with a decreasing force as is usual with such springs. This peculiar effect being produced by increasing the leverage of the spring upon the beam to be lifted as the beam rises, although the spring is at the same time losing some part of its tension and lifting force.

Infringement is charged of the first, second and third claims of the patent, which are:

1: In a cultivator, the combination of a vertically swinging drag bar or beam and a lifting spring which acts with increasing force or effect on the beam as the latter rises, and vice versa.

2: In a wheeled cultivator the combination of a vertically-moving beam and a lifting-spring, substantially as described, whereby an increasing upward strain is communicated to the beam as the latter rises.

3: The combination of a wheeled frame, a vertically-moving beam or drag bar attached thereto, and a lifting spring, substantially as described, which exerts a greater strain or effect upon the beam when the latter is elevated than when it is depressed.

The defenses interposed are:

Want of patentable novelty and non-infringement.

The bill avers, and the proof fully shows, that in the month of December, 1887, complainant brought suit in the United States Circuit court, for the Southern district of Iowa, against David Bradley & Co. for an infringement of the same patent; that the said David Bradley & Co. was a branch house of the defendant in this case, and was engaged in selling the identical class of cultivators which are charged to infringe the complainant's patent in this case. That the defendant herein, undertook and managed the defense of said suit, employing counsel for that purpose, and conducting the defense in the name of David Bradley & Co., the said branch house, and that such proceedings were had in said case; that the same was brought to hearing upon the merits at the May Term of said court for 1888, and the said court did then and there adjudge and decree that the said David Bradley & Co., by the sale of said cultivators, had infringed the complainant's patent and enjoined the further use of said patented device by the defendants in said cause.

It is further alleged in said bill and shown by the proofs that the cultivators which the defendants in the said Iowa case were charged with selling and thereby violating the co nplainant's patent were manufactured by the defendant in this case.

It is contended that upon the facts alleged in the bill and shown in the proof in regard to the prior case, that defendant herein is estopped from any further controversy in regard to the validity of complainant's patent or the fact of infringement.

An examination of the record in the Iowa case, which is in evidence in this case, and of the opinion of the court in that case (35 Fed. R. 295) shows that all the questions now made in this case were made in the Iowa case, and fully considered and passed upon by the court, and held against the defendant; that the proof upon the issue made in this case upon the question of novelty and non-infringement, is essentially the same as was placed before the Iowa court, excepting that defendant in this case has introduced proof tending to carry the invention, in the patent of C. A. Hague, under which defendant is working, granted June 21, 1881, back to an earlier date than that of the invention covered by complainant's patent.

But a careful examination of this new proof, introduced by the defendant, fails to satisfy me that the Hague invention ante dates the invention covered by the complainant's patent.

It being a well established rule of evidence that the fact of priority of invention, in order to defeat a patent, must be so clear and convincing as to leave no reasonable doubt.

Coffin v. *Ogden*, 18 Wall., 120.

Shirley v. *Sanderson*, 8 F. R., 908.

Aside from the rule of comity, which this court has always endeavored to observe, especially in patent cases, it seems quite clear to me that the defendant in this case was so far a privy to the litigation in the Iowa case, as to make the decree in that case binding upon the defendant here.

The rule laid down in *Robbins* v. *Ghicago Gity*, 4 Wallace, 657, seems to me fully applicable to this case. There, the court saith: "The conclusive effect of judgments respecting the same cause of action and between the same parties rests upon the just and expedient axiom, that it is for the interest of the community that a limit should be opposed to the continuance of liligation, and that the same cause of action should not be brought twice to a final determination."

Parties in that connection, include all who are directly interested in the subject matter, and who had a right to make defense, control the proceedings, examine and cross-examine witnesses and appeal from the judgment.

And the same rule is re-stated and followed in numerous cases, amomg which are:

Beloit v. *Morgan*, 7 Wall., 619.

Miller v. *Liggett, et al.*, 7 Fed. R., 91.

Claflin v. *Fletcher*, Ibid , 851.

American Bell Tel. Co. v. *Nat. Imp. Tel. Co.*, 27 Fed. R., 666.

Morse v. *Knapp*, 37 Fed. R., 352.

Lea v. *Deakin*, 11 Biss, 23.

Wilson Exrs. v. *Dean*, 121 U. S 525.

The proof in this case shows, beyond doubt, that the defendant in this cause with the consent of the defendant in the Iowa case made itself the *dominus litus* in that case, it controlled the defense appeared by its own attorneys, it was the manufacturer of the plows in which the alleged infringement was found, and may I think with entire propriety be held to be bound, not only upon all the questions which were raised and determined in the former case, but upon all which might have been raised and determined in that case. The Hague patent itself was considered by the Iowa court, and not held to be an anticipation or protection as against the complainant's patent. The defendant may, I think, be considered as bound, not only by all the evidence which was considered in the Iowa case, but all which it could have appropriately put into the record in that case, including the testimony which it is claimed, would carry the Hague invention back of the Wright invention.

I am, therefore, of opinion that all the defenses, which are urged here, have been anticipated and cut off by the decree in the Iowa case.

A decree will therefore be entered, finding that the defendant infringed, as charged, and for an injunction and accounting.

[Endorsed]: Filed July 13, 1891.

WM. H. BRADLEY, *Clerk*.

Afterward, to-wit: On the seventh day of October in the adjourned October term of said court, 1891, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

DECREE.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

Decree, entered October 7, 1891.

And now, to-wit: October 7, 1891, this cause having come on to be heard at a regular term of the court on final hearing, on bill, answer, replication and proofs duly taken on both sides, and having been argued by counsel for the respective parties, and the court being fully advised in the premises, it is ordered, adjudged and decreed that the letters patent in said complainant's bill mentioned, to-wit: Letters Patent of the United States number 242,497, granted June 7, 1881, to Edgar A. Wright for an improvement in Cultivators, are in all respects a good and valid patent; that the said Edgar A. Wright was the first and original inventor of the improvement in said letters patent described and claimed; that the said complainant is entitled to the exclusive right in, to and under said recited letters patent, and in and to the invention and improvement secured thereby; that the said defendant by the manufacture and sale of cultivators substantially such in construction and operation as described in said Wright patent and claimed in the first four claims thereof, has infringed upon the said patent and upon the exclusive rights of the said complainant therein and thereunder as claimed in the first four claims thereof, and that the complainant do recover of the said defendant all gains and profits by it made, and the damages sustained by complainant by reason of such infringement, as well as the costs and charges of this suit to be duly taxed; and that it be referred to E. B. Sherman, Esq., one of the masters of this court to ascertain the amount of such gains and profits and of the damages sustained by the said complainant by reason of such infringement. And further that a writ of injunction according to the prayer of said bill be issued from and under the seal of this court, restraining and enjoining the defendant, its agents, employees, servants, workmen and all others acting by and under its authority from any further infringement of the said letters patent, and of the exclusive rights of said complainant thereunder.

And it is further ordered that the complainant, on such accounting, has the right to cause an examination of said defendant's officers, agents, employees and workmen, *ore tenus* or otherwise, and also the production of the books, vouchers, documents or other papers of the defendant, and that the said defendant, by its proper officer, servant, agent or attorney, attend for such purpose before said master, from time to time, as said master shall direct.

Afterward, to-wit: On the eighth day of October, 1891, came the defendant, by its solicitors, and filed in said clerk's office its petition for appeal and assignment of errors in said entitled cause, which said petition and assignment of errors are in the words and figures following, to-wit:

PETITION FOR APPEAL.

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Equity.*

Petition for appeal, filed Oct. 8, 1891.

And now comes the David Bradley Manufacturing Company, defendant in the above entitled cause of action, by its solicitors, and prays for an appeal in said cause of action to the United States Court of Appeals for the Seventh Circuit, and for a supersedeas of the injunction granted in said cause in and by the decree entered therein October 7th, A. D. 1891.

Assignment of Errors.

And makes the following assignment of errors or reasons for appeal in support thereof:

1. That the court erred in finding the complainant's patent valid. Assignment of errors, filed Oct. 8, 1891.

2. The court erred in not finding the patent sued on invalid for want of patentable novelty or invention.

3. The court erred in finding the patent sued on to be valid notwithstanding a prior patent showing the same machine, granted to the same patentee December 10, A. D. 1879.

4. The court erred in finding the patent sued on valid in view of the prior art.

5. The court erred in holding that the patent sued on was valid, and was unlimited as to mechanical construction.

6. The court erred in holding that the defendant's machine infringed.

7. The court erred in not finding that Charles A. Hague invented and constructed the machine manufactured by the defendant prior to the invention by E. A. Wright of the machine shown and described in the patent sued on.

8. The court erred in not finding that Henry N. Dalton invented and constructed substantially the same machine manufactured by the defendant, prior to the invention by E. A. Wright of the machine shown and described in the patent sued on.

9. The court erred in holding that the defendant was estopped by the proceedings in the Eighth Circuit from making any defense in this cause upon the merits.

10. The court erred in holding that the defendant was estopped by the proceedings in the Eighth Circuit from making a new defense in this cause.

11. The court erred in holding that the defendant was in this suit estopped from setting up or proving additional defenses to those interposed at the prior suit in the Eighth Circuit.

12. The court erred in holding that all the defenses urged in this suit were anticipated and cut off by the decree in the Iowa case.

Wherefore the defendant says that in the record of the said cause there is manifest error, and prays that an appeal be allowed it and a supersedeas be granted, as above prayed.

DAVID BRADLEY MANUFACTURING CO.,
By BOND, ADAMS & PICKARD,
Its Solicitors.

[Endorsed]: Filed Oct. 8, 1891.

WM. H. BRADLEY, *Clerk.*

On the same day, to-wit: On the eighth day of October, in the adjourned October term of said court, 1891, in the record of the proceedings thereof in said entitled cause, before Hon. Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Chancery.*

Order, entered Oct. 8, 1891.

On prayer of the defendant, an appeal is allowed it to the United States Circuit court of Appeals for the Seventh Circuit from the decree herein, and said appeal is made a supersedeas on condition that said defendant, within ten days, file an appeal bond in the penal sum of ten thousand dollars, with surety, to be approved by one of the judges of this court, conditioned as provided in rule thirteen of said Circuit court of Appeals.

Afterward, to-wit: On the nineteenth day of October, 1891, there was filed in said clerk's office an appeal bond in said entitled cause, which said bond is in the words and figures following, to-wit:

APPEAL BOND.

Appeal Bond, filed Oct. 19, 1891.

Know all men by these presents, that we, The David Bradley Manufacturing Company, as principal, and David Bradley, as surety, are indebted to the Eagle Manufacturing Company in the penal sum of ten thousand dollars ($10,000), good and lawful money of the United States, for the payment of which well and truly to be made we bind ourselves, our heirs, executors and administrators jointly and severally by these presents.

In testimony whereof, the said The David Bradley Manufacturing Company has caused these presents to be signed by its president and its corporate seal to be affixed hereto, and the said David Bradley has hereunto affixed his hand and seal this sixteenth day of October, 1891.

The condition of the above obligation is such that whereas, in a cause now pending in the Circuit court of the United States, in and for the Northern district of Illinois, wherein the said The Eagle Manufacturing Company was complainant, and the said The David Bradley Manufacturing Company was defendant, a decree was entered on the seventh day of October, A. D. 1891, by the Honorable Henry W. Blodgett, against the said The David Bradley Manufacturing Company, defendant, in favor of The Eagle Manufacturing Company, complainant, among other things, enjoining the said defendant, as therein set forth; and whereas, the said The David Bradley Manufacturing Company has prayed an appeal from said decree to the United States Circuit court of Appeals for the Seventh Circuit, and that a supersedeas be granted in said cause pending said appeal, which said appeal has been allowed and said supersedeas granted.

Now, therefore, if the said The David Bradley Manufacturing Company shall well and truly prosecute its said appeal with effect, and shall answer to the said The Eagle Manufacturing Company all damages and costs by the said The Eagle Manufacturing Company sustained in case it the said The David Bradley Manufacturing Company shall fail to sustain its said appeal, then and in such case the above obligation is to be void; otherwise to be and remain in full force and effect.

[SEAL] DAVID BRADLEY MANUFACTURING CO.,
By DAVID BRADLEY,
President.

[SEAL] DAVID BRADLEY.

STATE OF ILLINOIS, }
COOK COUNTY. } ss.

Before me Edward S. Troughton, a notary public in and for said county, personally appeared David Bradley, president, and David Bradley, surety, who acknowledged the foregoing signatures as their voluntary act for the purposes and uses therein set forth.

Witness my hand and notarial seal, this sixteenth day of October, A. D. 1891.

[SEAL] EDMOND S. TROUGHTON,
Notary Public.
Cook Co., Ills.

Approved: H. W. BLODGETT, *Judge.*

[Endorsed]: Filed October 19, 1891.

WM. H. Bradley, *Clerk.*

Afterward, to-wit: On the seventh day of November, in the adjourned October Term of said court, 1891, in the record of the proceedings thereof in said entitled cause, before Honorable Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

The Eagle Manufacturing Company, } *In Chancery.*
v.
David Bradley Manufacturing Company. }

Order, entered Nov. 7, 1891.

On motion it is ordered that the time for completing the record on appeal herein be extended thirty days.

Afterward, to-wit: On the twenty-fifth day of November, 1891, there was filed in said clerk's office a stipulation in said entitled cause, which said stipulation is in the words and figures following, to-wit:

UNITED STATES CIRCUIT COURT, NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company. } *In Equity.*

It is hereby stipulated and agreed by and between counsel for the respective parties, and as a matter of record herein, that the record herein for transmission to the Circuit court of Appeals, shall include and consist of a transcript of the following: Stipulation, filed Nov. 27, 1891.

1st: The Pleadings.

2nd: Proofs, stipulations and proceedings, before Kate S. Holmes, notary public, November 10, 1888.

3rd: Proofs, stipulations and proceedings, before E. B. Sherman, master in chancery, June 14, 1889.

4th: Admission, signed by West & Bond, solicitors for defendant purporting to be "signed this 9th day of January, 1889."

5th: A stipulation signed by Nathaniel French, solicitor for complainant, and by West & Bond, solicitors for defendant, dated October 9, 1889.

6th: Proofs, stipulations and proceedings, before Effie E. Moran, notary public, Scott county, Iowa, the certificate whereof bears date, October 23, 1889.

7th: Papers and documents constituting "Complainant's exhibits of case against David Bradley & Company," originally offered in evidence in the proceedings taken before Kate S. Holmes, as above noted, but omitting so much thereof as belongs to defendants record therein.

8th: The depositions of E. Wright, omitting X. Q. 152, 190, X. Q. 197, 198, also of A. K. Raff, but omitting from the commencement of the cross-examination of Raff, X. Q. 18, to the end of the re-cross examination R. X. Q. 36, and including also the deposition of E. P. Lynch, omitting from Q. 25, to the end of his direct examination and also omitting X. Q. 38, in his cross-examination, and all following to the end of the answer R. D. Q. 107 and also omitting R. D. Q. 110, 111 and 112, R. D. Q. 114 to 117, both inclusive and also including the deposition of G. Watson French, as the said depositions are contained in a stipulated printed copy, entitled *The Eagle Manufacturing Company*, plaintiff, v. *W. L. Miller and L. W. Miller*, defendants. The exhibits accompanying said depositions may be attached to the said transcript, or if this cannot be done, they may be re-produced.

9th: Final decree in *Eagle Manufacturing Company* v. *David Bradley & Company*, United States Circuit court, Southern district of Iowa, Eastern division, No. 2,229 in Equity.

10th: Decree on final hearing in the same cause, the original date of filing said decree, being May 23, 1888.

11th: Decree in the same *complainant* v. *The Davenport Plow Company*, in the court last above named, No. 25 Equity, June Term, 1887.

12th: Defendant's proofs and exhibits, said exhibits to be attached as hereinafter further specified.

It is further stipulated and agreed that the original exhibits accompanying said proofs, stipulations and proceedings, or referred to therein, shall, when practicable, be attached to and form part of the record to be made up and transmitted as aforesaid, or where impracticable for attachment and transmission, that the same may be withdrawn from the record in the Circuit court and produced in the Appelate Court at the hearing (subject, of course, to the right of inspection at all reasonable times by the opposite party.)

Exhibits in the nature of photographs or such as may otherwise conveniently be reproduced, may, when necessary, be reproduced by copies in lieu of the originals.

Among other of said exhibits are more particularly included the following, but the enumeration of which shall not operate to exclude others material to the issue and not enumerated.

A certified copy of the complainant's patent sued on.

Blue print marked Exhibit B 1.

Blue print marked Exhibit B 2.

The papers constituting copy of complainant's record and of defendant's record in the case of the Eagle Manufacturing Company against David Bradley & Company, in the Circuit court of the United States, in the Southern district of Iowa, having attached thereto "Exhibit Circular Golden Eagle Cultivator," and exhibit Bates Sketch of Radius Bar Modifications, which said copies are marked "Complainant's Exhibits of Case against David Bradley & Company." The sketches, cuts, Patent Office copies of Letters Patent, etc., bound together in book form, and marked "Complainant's Exhibit Case against David Bradley & Company."

The file wrappers and contents in the matter of the application of E. A. Wright for the patent in suit, No. 242,497.

The file wrapper and contents in the matter of Wright's application for letters patent No. 222,767.

The file wrapper and contents in the matter of the application for letters patent, No. 243,123.

The three last above named exhibits shall not be attached to said record, but shall be treated as mechanical exhibits and produced in said Circuit court of Appeals at the hearing of said cause.

"Exhibit Defendant's Cultivator."

"Exhibit Defendant's Dalton Machine."

"Defendant's Exhibit walking cultivator with Dalton springs."

The two exhibits last named belonging to defendant, constitute a part of the record in the David Bradley & Company case, and are included herein as a part thereof.

"Complainant's Patent Office Exhibit Wrights' testimony."

"Complainant's Exhibit interference record."

"Complainant's Exhibit interference decision."

"Complainant's Exhibit interference photographs 1, 2, 3 and 4."

"Complainant's Exhibit interference sketch."

"Complainant's Exhibit interference freight bill."

"Complainant's Exhibit Patent Office correspondence regarding interference Exhibit No. 6."

It is further agreed that in case it should be found at the hearing before the Appellate court that any record or exhibit forming a part of the case when on hearing in the court below, and material to any of the issues therein, has been omitted, the party desiring the use thereof may, under suggestion of diminution of record produce and use the same with like effect as if the same were included in this stipulation.

It is further stipulated and agreed that any document, writing or exhibit which may appear or be referred to more than once in the above transcript, shall he copied in full only once, and when the same occurs or is referred to thereafter in said record, it shall be only referred to, citing such place in said record at which it may have previously been set out in full.

BOND, ADAMS & PICKARD,
Attorneys for Appellant, the David Bradley Plow Co.

GEORGE H. CHRISTY,
Attorneys for Appellee, Eagle Manufacturing Co.

Pittsburg, Pa., Nov. 23, 1891.

[Endorsed]: Filed Nov. 25, 1891.

WM. H. BRADLEY, *Clerk.*

On the same day, to-wit: On the twenty-fifth day of November, in the adjourned October Term of said court, 1891, in the record of the proceedings thereof in said entitled cause, before Honorable Henry W. Blodgett, District Judge, is the following entry, to-wit:

ORDER.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company. } *In Chancery.*

Upon reading and filing the stipulation between the counsel of the respective parties herein as to what the record on appeal herein shall include and consist of, it is ordered that said stipulation be approved with the proviso that the clerk's fees for making the transcript of said record, shall, as to the stipulated matter, be agreed upon to the satisfaction of the clerk.

Order, entered Nov. 25, 1891.

IN THE CIRCUIT COURT OF THE UNITED STATES, NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Co. } *In Equity.*

By consent of the parties to this cause, the following depositions and proofs were taken on behalf of the complainant before Kate S. Holmes, a notary public in and for Cook county, Illinois, at Chicago, Illinois, commencing on the 10th day of November, 1888.

Complainant appeared by George H. Christy and Nathaniel French, its counsel; defendant by West & Bond, its counsel.

Complainant offered in evidence a printed copy of the complainant's record and of the defendant's record, in the case of the Eagle Manufacturing Company against David Bradley & Company, in the Circuit court of the United Stat s in the Southern district of Iowa; having thereto attached "Exhibit Circular Golden Eagle Cultivator," and "Exhibit Bates' Sketch of Radius Bar Modifications,"—the defendant admitting the correctness of said copy, but objecting to its competency and materiality.

Which said copies are marked, "Complainant's Exhibits of Case against David Bradley & Company."

Complainant also offered in evidence, with the same admission and objection, a printed copy of the decree in said cause, marked, "Complainant's Exhibit Bradley decree."

Also, Patent Office copies of the Letters Patent, which are exhibits made by reference a part of the printed record in said suit against David Bradley & Company, and which are offered as part of said case.

Complainant also offered in evidence a printed cut showing the cultivator sold by the said David Bradley & Company.

Also, a drawing of the W. J. Browne device involved in the Interference case.

Also, two sketches of cultivators made by the Davenport Plow Company, and mentioned in the decree against that company.

All of which sketches and cuts are mentioned as exhibits in the said printed record in the case against David Bradley & Company, and the correctness of which are admitted with the same objection as to competency and materiality.

The before mentioned exhibits of patents, cuts and sketches, are bound together in book form, and marked, "Complainant's Exhibit case against David Bradley & Company."

The complainant also offers in evidence file-wrapper and contents in the matter of the application of E. A. Wright for the patent sued upon herein, No. 242,497.

Also, the file-wrapper and contents in the matter of the application for letters patent No. 222,767, to said Wright.

Also, the file wrapper and contents in the matter of the application for letters patent No. 243,123, to C. A. Hague.

All of which file-wrappers are mentioned as exhibits in the printed record in said case against David Bradley & Company, and which are also marked by the notary, "Complainant's Exhibits of case against David Bradley & Company."

Complainant offers in evidence a copy of the assignment of the letters patent sued on from E. A. Wright to the complainant, defendant waiving certification thereof by the Patent Office, the same being marked, "Complainant's Exhibit Assignment of Wright Patent."

Complainant also offers in evidence a cultivator marked, "Exhibit Defendant's Cultivator," being the same cultivator referred to as an exhibit in the printed record in the case against David Bradley & Company, and being a cultivator admitted to have been made by the defendant herein.

Also, the machine marked, "Defendant's Exhibit Dalton Machine," and the machine marked, "Defendant's Exhibit Walking Cultivator with Dalton Springs," the said two machines having been offered in evidence by the defendant in the case against David Bradley & Company, and being referred to as exhibits in the printed record in this case, and the same being offered as a part of said case.

The two last named machines being under the control of the defendant in this case, the defendant is requested to produce the same on final hearing.

Counsel for defendant objects to the W. J. Browne device as being immaterial, incompetent and irrelevant.

The complainant also offers in evidence a printed copy of the testimony of Wright in the Interference case in the Patent Office, *Shaver* v. *Browne* v. *Wright*, marked, "Complainant's Patent Office Exhibit, Wright's Testimony.

Counsel for defendant waives certification of said printed copy, but objects to said testimony as incompetent, immaterial and irrelevant.

It is mutually agreed by counsel for the respective parties hereto, that each party may, until final hearing, retain posession of its depositions, proofs and exhibits, subject, however, to inspection by the other party at all reasonable times, and it is also agreed that the exhibits offered in evidence in this case may also be used in evidence in the case by the complainant herein against the Moline Plow Company, pending in the same court as this case, and in which case the same counsel appear for complainant and defendant as in this case.

ASSIGNMENT.

Whereas, Edgar A. Wright, of Davenport, Iowa, has obtained letters patent of the United States for a new and useful improvement in cultivators, which letters patent bears date June 7, 1881, No. 242,497.

And, whereas, The Eagle Manufacturing Company of Davenport, Iowa, is desirous of acquiring said patent:

This Indenture witnesseth, That for and in consideration of one dollar, the receipt of which is hereby acknowledged, I have assigned, sold and set over, all the right, title and interest which I have in said invention, as secured by said letters patent to and in the whole United States, the same to be held and enjoyed by the said Eagle Manufacturing Company for their own use and behoof, of their legal representatives, to the full end and term for which said letters patent are granted; also reissues, as fully and entirely as the same would be held and enjoyed by me had this sale not been made.

In witness whereof I hereunto set my hand and seal this 13th day of June, 1881.

E. A. WRIGHT.

In presence of Geo. H. French.

Notary's Certificate.

United States of America,
Northern District of Illinois,
State of Illinois, County of Cook, } ss.

Be it remembered, that on this 10th day of November, in the year of our Lord, one thousand eight hundred and eighty-eight, I, Kate S. Holmes, a notary public in and for the said county of Cook and state of Illinois, and duly authorized to take depositions according to the laws of the state of Illinois, and further, duly authorized and empowered to take the following deposition by virture of a certain stipulation hereinafter entered of record, wherein and whereby the parties to the cause in which said deposition was taken, did stipulate and consent that the same should be taken before me as such notary public, did call and cause to be, and personally appear before me, at room 115, at the Grand Pacific Hotel, in the city of Chicago, state of Illinois, and in said Northern district of Illinois, Henry L. Brevoort, to testify, and the truth to say on behalf of the complainant in a certain suit or matter of controversy now pending and undetermined in the Circuit court of the United States for the Northern district of Illinois, in the district aforesaid, wherein the Eagle Manufacturing Company is complainant, and the David Bradley Manufacturing Company is defendant, and I did take and receive the hereinafter specified proofs offered by complainant.

And the said Henry L. Brevoort, being about the age of thirty-nine years, having been by me first cautioned and sworn to testify the truth, the whole truth, and nothing but the truth, in the matter of controversy aforesaid, I did carefully examine the said Henry L. Brevoort, and he did thereupon depose, testify and say as follows:

Deposition of H. L. Brevoort.

Deposition of H. L Brevoort.

Q 1. State your name, age, residence and occupation.

A. My name is Henry L. Brevoort; I am 39 years of age; I reside in Brooklyn, New York, and I am by occupation, an engineer.

Q. 2. State generally what opportunity you have had for familarizing yourself with mechanical questions, and your experience in dealing with such questions, particularly as they arise in connection with patents for inventions.

A. When I was a boy I learned the trade of a machinist, and for some years I operated a machine shop of my own. For the last thirteen or fourteen years I have been very frequently called upon to testify as an expert witness in suits relating to patents, and have been so called in between four and five hundred cases. I may here state that I am acquainted with the structure of agricultural implements, having been called to testify in suits relating to hay rakes, harrows, plows, mowing machines and cultivators. I have had a large experience in the preparation of drawings, specifications and the like, and am a practical draughtsman.

Q 3. Have you examined letters patent of the United States, No. 242,497, granted June 7, 1881, to Edgar A Wright, being the patent sued on, so as to understand the construction and operation of the invention described therein, and more particularly summed up in claims, 1, 2, 3 and 4?

A. I have frequently read and examined the patent, and I think I understand the mechanism therein described, and its purpose and operation. I have also carefully read the claims referred to, and I think that I understand the invention set forth in the said claims.

Q. 4. What do you understand to be the invention described therein?

A. The Wright patent is for an improvement in a certain class of agricultural machines known as cultivators. These machines, the patent says, are generally wheeled, and they have vertically-swinging

beams or drag-bars, and an arched axle capable of passing over the standing corn. To this class of machines the invention is applicable. The invention consists in applying the lifting springs so that they exert upon the beams a maximum power or strain when the latter are above an operative position, the springs acting with an increasing force or effect on the beam as these beams are raised from the operative to the inoperative position. The object of this is as follows: When in use, the beams of the cultivator are intended to be moved by an operator as the machine passes over the ground, so that those portions of the earth can be acted upon by the shovels, which, in the judgment of the operator, requires such action. During this operation it is not desirable that the lifting springs should be exerting an, or any, appreciable upward strain, because if they did, the operator would have to continually come back or resist this strain during the ordinary work of the machine, and when the shovels are acting upon the ground between the growing corn. In passing from place to place, in passing over obstructions, and to free the shovels from roots and adhering substances, it is frequently necessary to raise the plow beams and the attached shovels above the operative position in which they are when the shovels are in the ground, and as the beams are heavy this would impose considerable labor upon the operator, if performed entirely by his own manual strain. The patent describes an arrangement whereby the drag-bars, or vertically-swinging beams which carry the cultivator points, can, by springs, be raised when the operator starts them in the upward direction with an increasing lifting force, so that the beams will be elevated by a strain increased as the beam or beams move up, while at the same time, with the beams in their operative position, the strain is either greatly lessened, or is practically removed. The patent shows and describes springs adapted to give this mode of operation, though the inventor says that other forms may be used when they are so combined with the machine that they exert a greater or stronger lifting force or effect upon the beams when the latter are above the operative position, than when it is in use and in the operative position.

The first claim refers to a combination of certain parts on a machine having the essential characteristics of a cultivator, and by this I understand the claim to mean a machine provided with suitable supporting devices, such as wheels or their equivalent, an arched frame and vertically-swinging drag-bars or beams carrying shovels and combined with lifting springs, which act with an increasing force or effect on the beams as these beams are elevated from their operative position with the shovels in the ground.

The second claim is also for a combination in the same class of mechanism, and it includes the necessary structure to constitute a properly supported or wheeled cultivator, embracing the vertically-moving beam and a lifting spring so combined with the other parts, that, as the beam is raised from its operative position, an increasing upward strain is communicated to the beam as the latter rises.

The third claim is also for a combination of parts in a machine having the requirements of that which is described in the patent, embracing a wheeled frame, or a frame otherwise properly supported, a vertically-moving beam or drag bar, or bars attached thereto, combined with a lifting spring as described in the patent, which is adopted to exert upon the beam a greater strain or effect when the latter is elevated than when it is depressed or in the normal working position with the shovels in the ground.

In the fourth claim the same features are involved; the vertically-moving beam, or beams, a lifting spring and a shifting or changing bearing, whereby the lifting action or effect of the spring upon the beam, or beams, is increased as these devices are elevated from the operative position.

In the Wright patent the springs are so combined with the arched axle and the beams, that when the beams are elevated the springs increase their lifting effect upon the beams as the beams go up, the conditions becoming more favorable for the elevating action of the springs so far as their effect upon the beams is concerned. The springs thus, as I may say, obtaining a more and more advantageous action upon the beams, so that from a condition of no practical elevating capacity, or, at least, a very slight elevating capacity, they acquire as the beams go up very great elevating capacitiy upon such beams, although the springs themselves are diminishing in tension.

Q. 5. Have you examined the patent granted to B. C. Bradley for a cultivator, number 270,629, dated January 16, 1883, and if so, do you understand the cultivator shown and described in that patent? You may also, in answering the question, state whether you have seen and examined a full-sized Bradley cultivator, embodying the features of construction shown in the patent above referred to.

A. I have frequently examined the Bradley patent referred to in the question, and I think that I understand the construction of the device shown and described in the said patent. I have also examined a full-sized operative Bradley cultivator, and I understand its construction and mode of operation.

Q. 6. Please state, after making a comparison between the Wright patent, 242,497, and the device shown in the Bradley patent, 270,629, and as also embodied in the full-sized machine which you say you saw, whether, in your opinion, the said Bradley patent and the machine you examined, does, or does not, embody the invention of any of the claims of the Wright patent here in suit. State the results of your comparison and the reasons which lead you to any conclusion you may express.

A. I have made the comparison called for in the question, and I think that the Bradley cultivator contains the inventions set forth in the first four claims of the Wright patent in suit. I will give my reasons for this opinion:

The Bradley cultivator is a machine adapted for identically the same purposes, and used as is the machine of the Wright patent, and it contains all of those features which are set forth in the first four claims of the Wright patent as being essential to the inventions there specifically enumerated. That is to say, the Bradley machine is one in which there is a frame properly supported upon wheels; there is an arched axle, and there are two drag-bars so attached that they can be moved horizontally during the action of the spades upon the earth, and also so constructed that they can be elevated vertically when it is desired to lift them from their operative to their inoperative position. These features, which are essential features in a cultivator, are specified or implied in each one of the claims, as I understand them, of the Wright patent to which my attention has been called, and so far as each one of these claims go, these features, which are portions of the claim are found in the said Bradley machine in almost identically the form as they are found in the Wright machine, the parts performing the same function and co-operating in like manner to produce like results. In the Bradley machine, a U shaped spring is fastened at one end to the frame of the machine, and at the other end this spring connects with a couple of links uniting it to a pivoted lever also pivotally attached to the frame. The other end of this lever has united to it the rod and chain which connects its end with the iron socket which is practically a part of the drag-bar itself. When the shovels are in the operative position, the pivoted lever stands nearly horizontally, and the pull of the spring is transmitted through the lever nearly in line with the three points of connection which are provided for the lever, and, of course, the pull of the spring upon the drag-bar to elevate it is very slight, and thus when the drag-bar is in operation, there is no practical lifting strain or effect transmitted to it from the spring, and the operator is not required to hold the drag-bar down against a heavy upward pull. When it is necessary to raise the drag-bar so as to enable the shovels to pass over an obstacle, or for the purpose of clearing them of adhering roots or the like, the operator gives to the drag-bar a slight upward lift, and as he does so, the pivoted lever turns upon its fulcrum, and a U shaped spring acts to further turn the lever, and as the drag-bars move upward the spring continually exerts its lifting effect upon the drag-bar with an increased strain or effect, for, as the pivoted lever turns from approximately the horizontal to approximately the vertical position, the spring, though weakening in strength, acts continually to a greater advantage, and thus gives an increased lifting strain to the drag-bar, so that it is elevated either wholly by the spring, or partly by the spring and partly by the operator, but with great ease, and with a constantly increased effort or strain. Now, the first three claims of the Wright patent

refer, in the case of the first claim, to a "lifting spring which acts with increasing force or effect on the beam as the latter rises." In the second claim, a "lifting spring substantially as described, whereby an increasing upward strain is communicated to the beam as the latter rises," is referred to. In the case of the third claim I find the following: "And a lifting spring substantially as described, which exerts a greater strain or effect upon the beam when the latter is elevated that when it is depressed." In the construction of the Bradley machine, these essential features of the claims as above set forth, are all embodied, and in the said Bradley machine the results of the action of the parts is the same as would follow the use of the Wright mechanism, so far as the effect of the spring upon the beams during their elevation is concerned, and I am of the opinion that the Bradley machine contains all features of these claims as specified therein, the machine being substantially the same machine, and having substantially the same mode of operation as the Wright patent described.

The fourth claim refers to a mechanism having a "shifting or changing bearing, or fulcrum, whereby the lifting action or effect of the spring upon the beam is increased as the beam is elevated." In the Bradley machine, there is, in my opinion, such a shifting or changing bearing, or fulcrum, and it is found where the links from the three ends of the spring connect with the pivoted lever, as shown in the patent; this point is marked "C," and this point of bearing shifts or changes its relation to the fulcrum about which the lever turns, and thus the Bradley machine has, in my opinion, the shifting or changeable bearing whereby the lifting action or effect of the spring upon the beam is increased as the beam is elevated. Moreover, in the Bradley structure, as this bearing "C" moves about the fulcrum of the lever, its position is so shifted or changed that the spring can exert an increased lifting effect upon the beam as the same is elevated, and for this reason I think that the Bradley machine contains the invention of the fourth claim of the Wright patent, having the same parts, and the same combination of parts co-operating to produce the same result in a machine intended for the same use and application. I have not omitted to take into consideration, in making this comparison, that there are certain differences of structure between the Wright machine and the Bradley machine, but these differences I do not think material, as they do not affect the operation of the machine, or change its characteristics in any way. In both cases the drag-bars are present, having attached to them shovels; in both cases these are elevated by springs, and by springs, which, in the two cases, are losing tension during the operation of elevating the drag-bars, and, in both cases, these springs which are losing tension, are enabled, by being suitably connected with the drag-bar, to exert an increased lifting force or strain upon that bar as it rises from the operative to the inoperative position. In both the Bradley and Wright machines the increased lifting effect is obtained by shifting the bearing point of the spring, thereby giving it an increased leverage.

HENRY L. BREVOORT.

NOTARY'S CERTIFICATE.

UNITED STATES OF AMERICA,
NORTHERN DISTRICT OF ILLINOIS,
STATE OF ILLINOIS, COUNTY OF COOK. } ss.

I, Kate S. Holmes, a notary public duly authorized to take depositions under and by virtue of the laws of the state of Illinois, and further duly authorized to take the foregoing deposition, by virtue of a certain stipulation entered into by the counsel of the respective parties in the above entitled cause, which said stipulation is hereinbefore duly entered of record, do hereby certify that on the 10th day of November, 1888, I was attended at room 115, of the Grand Pacific Hotel, in the city of Chicago, county of Cook, state of Illinois, and in the district aforesaid, by Mr. George H Christy and Mr. Nathaniel French, solicitors for the complainant in the above entitled cause, and by Messrs West & Bond, solicitors for the defendant in the above entitled cause, and by Mr. Henry L. Brevoort, who was of sound mind and lawful age, and the said Henry L. Brevoort, witness, was by me carefully examined and cautioned, and sworn to testify the truth, the whole truth, and nothing but the truth; that his deposition was by me reduced to writing in the presence of the witness, and from his statements; that, after the same was carefully read over by the said witness, he subscribed the same in my presence; that I have retained the said deposition in my possession for the purpose of delivering the same to the said solicitors of the said complainant, pursuant to the stipulation of counsel for the respective parties hereinbefore duly entered of record.

And I also certify that the before-mentioned exhibits and documents were offered in evidence, and that the foregoing is a correct record.

And I do further certify that I am not of counsel or attorney for either of the parties in said deposition or caption named, or in any way interested in the event of the said cause named in said caption.

In testimony whereof, I have hereunto set my hand and seal, this 10th day of November, A. D. 1888, and of the Independence of the United States, the one hundred and twelfth.

[SEAL] KATE S. HOLMES,
Notary Public.

Notary's fees for taking deposition, ten dollars ($10.00), paid by complainant.

KATE S. HOLMES,
Notary Public.

IN THE CIRCUIT COURT OF THE UNITED STATES, NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
David Bradley Manufacturing Co. } *In Equity.*

June 14, 1889.

The following deposition was taken on behalf of complainant, before E. B. Sherman, master in chancery of the Circuit court of the United States for the Northern district of Illinois, by agreement and stipulation of counsel for the respective parties.

Present: NATHANIEL FRENCH, for complainant, and WEST & BOND, for defendant.

STIPULATION.

It is hereby stipulated by and between the counsel for the respective parties to the above entitled suits, that the deposition of H. L. Brevoort, which was taken in the case of *The Eagle Manufacturing Company* v. *David Bradley & Company*, in the Circuit court of the United States for the Southern district of Iowa, and which deposition has been offered in evidence in this case, to be used in evidence herein, so far as material and relevant, with the same force and effect as though taken herein. The aforesaid deposition makes reference to the deposition of W. S. Bates, also taken in the case in the Southern district of Iowa, before mentioned, and which has also been offered in evidence herein.

Deposition of H. L. Brevoort.

In addition to the foregoing deposition complainant offers the said H. L. Brevoort as a witness, and asks the following questions:

H. L. Brevoort, being duly sworn, made oath, and testified as follows:

Direct Examination by Nathaniel French.

Deposition of H. L. Brevoort.

Q. 1. In the deposition of W. S. Bates, taken in this case, reference is made to "Defendant's Exhibit Dalton Old Plow." Do you understand the construction and operation of this plow, and what relationship does it bear, in your opinion, to the Wright invention?

A I have carefully examined the old plow referred to in the question, and I think that I understand its construction and its mode of operation. It is unnecessary to go into all the reasons which differentiate the mechanism of the Dalton structure from the Wright structure, as I have already done that in answer to question 5 in my previous deposition, where I had considered the matter at considerable length. There is, however, a difference between the Dalton machine as it exists, and the Dalton machine which is described in the patent; the Dalton machine, as described in the patent, is described as possessed of a spring whose lifting capacity is sufficient to raise the plow out of the earth when in operation, and to carry the shaft around until the weight is directly over the center of the axles of the wheels. In the Dalton structure, as it exists in the shape of the exhibit, a very weak spring is employed, and when the cranked portion of the axle is horizontal, the spring is unable to raise the weight of the plows. If, however, the lever be grasped by the hand, and the cranked portion of the axle carried through an arc of, say 60 or 70 degrees, then, the weight being very slight by reason of

its location in regard to the center of the axles of the wheels, the spring will operate and carry the weight of the plow through the rest of the arc. I fail to see that this weakening of the spring brings the device in any sense nearer to the Wright structure. The Dalton device is one in which a weight is elevated by a spring, and though the spring looses its tension, it may be able, if properly adjusted, to lift the weight by reason of the change of position of the weight in regard to the center about which it is being rotated, and this is true of the Dalton machine whether it has a weak spring or a strong spring, with the exception, that with a weak spring it will not go up without the assistance of the operator, while with a strong spring, it will. This difference is immaterial in this connection, and consequently, the reasons that I have previously given are as applicable in a comparison of the machine of Dalton, as patented, with the Wright structure, as with the machine of Dalton, as it exists, with the Wright structure.

Q. 2. Please examine patent No. 26,696, dated December 27, 1859, to P. Monaghan, and state what, in your opinion, is its relationship, if any, to the Wright invention, and whether you agree with what Mr. Bates says in his deposition in this case as to it having a changeable or shifting bearing like the modification shown in figures 3 and 5 of the Wright patent in suit.

A. I have carefully examined the patent inquired about in the question, and I do not agree with the conclusions expressed by Mr. Bates. The Monaghan device is not a cultivator, but is a device intended for cutting out plants in cotton fields. It has no drag-bars having lateral motion; it is not used to cultivate the earth; it has no arched axle, so that the rows of standing corn can be passed between the cultivator shovels, and it is a machine generally adapted for a different operation in connection with different crops The spring is one which always tends to hold the hoes upward, and likewise the frame that carries them; these hoes and their frame being up in the air, unless momentarily shoved down by the operator in the act of chopping out a plant. The spring has no action other than that necessary to hold the frame and hoes up. The spring has no changeable or shifting bearing like the modification shown in figures 3 and 5 of the Wright patent, where a spring changes its bearing in relation to the center of a roller and the fulcrum of the device that carries the roller. In the Monaghan patent, the spring resting on the bolt *d* as a center of rotation, is carried at its free end downward by the frame in exactly the same arc that the frame itself makes in moving down. Thus, there is no change in the bearing of the spring which moves up and down in the same arc with that portion of the frame in contact with which the free end of the spring is. In the Monaghan structure the spring is exerting its greatest tension or lifting effect on the frame when the hoes are in the ground, and its mimimum effect when the hoes and the frame to which they are attached are raised clear of the ground. In the Wright structure, on the other hand, when the beams

are in the ground the spring is exerting no lifting force on the beams, but the action or effort of the spring is carried to the fulcrum of the apparatus, being exerted on a line passing through said fulcrum; and by reason of the changing bearing as the beams are raised, the spring exerts a constantly increasing effect on the beams as they go up. In the Wright structure the above described action of the spring on the beam is obtained by a shifting bearing, which, continually as the beams go up, carry the line of strain from the spring further from the fulcrum or pivot of the beam.

Q. 3. Please examine the patent to Martin Hayden, No. 73,972, dated February 4, 1868, and state whether you agree with Mr. Bates' statement, that the structure shown in this patent has an increased lifting effect on the beams, due to a shifting bearing and shortening of the spring as in the Wright patent.

A. The Hayden machine contains such a poor drawing and such a meagre description that it is almost impossible to derive anything from it with certainty, but a few facts can be gathered by a careful study of the patent. The machine is really a seeding machine, but the patent describes its use as a cultivator by making certain alterations, which alterations are not clearly described, and which I do not think anyone would know how to make from the specifications. The machine has, apparently, four plow beams, and these are pivoted apparently to the bottom of the wheeled frame. There is no arched axle, and the beams are not provided with handles, and have not a pivotal sidewise motion. On the side of the hinges, upon which the cultivator beams may rise and fall, is a shaft running at right angles to the line of the beams. This shaft is controlled by a lever and suitable connecting devices. Projecting from this shaft are flat, straight springs, which, at their free ends, are held upon the beams near their rear ends by staples. When the shaft carrying the springs is rotated, the power to rotate the shaft is transmitted through the springs to the beams, and they act as transmitters of force like any yielding connection between two parts of a machine. The springs by, and of themselves, cannot raise or depress the beams through any material distance, but can act only through the operation of the lever Q, which rotates the shaft U. There is no change of bearing of the springs to enable them to throw their line of strain through, or away from a fulcrum; there is no increased lifting effort or strain on the beams; there is no neutral point had by a change of bearing, and the springs, in fact, perform no function other than that of a yielding connection. There is no shortening or decrease in the length of the spring to produce any change of bearing, or change in the line of force. This Hayden device in no way suggests or illustrates any of the ideas contained in the Wright patent, and is a machine of a different class, and operating on different principles. I do not understand Mr. Bates to claim that the Hayden structure

shows the Wright springs, or even the Wright invention, but he says that the springs, if properly adjusted, would have an increased lifting effect. I do not see how short of an entire reconstruction of the machine any such effect could be attained. No mere adjustment would produce the result Mr. Bates refers to.

Q. 4. Please examine patents No. 66,927, July 16, 1867, to A. Wiswall, and patent No. 67,525, August 6, 1867, to H. S. Frost, patent No. 116,644, July 4, 1871, to M. F. Tabor, and state whether you find in any of said patents the Wright invention, or any suggestion of it.

A. I have examined the patents that the question refers to, and I understand the structures described and shown therein. These patents all refer to door-springs, adapted both to hold the door open and to hold the door shut. The springs themselves are single-acting springs, as are all springs, but when combined, as shown in the patents, they are given a double action through the mechanism with which they are combined, and thus the springs are enabled to do the two things, viz: hold the door open, and hold the door closed. These patents are in no sense even suggestive of the Wright invention, for they do not show the combination which makes up the invention described and claimed by Wright. A spring of this nature used in a door has not the environment even which is suggestive of a cultivator structure. The requirements of a cultivator being entirely different from the requirements of a house door. Thus, in the door springs for a house, it is of but little importance where the dead or neutral point is located, for no effective work is to be done when the door is at the neutral or dead position. In a cultivator, however, the reverse is true. The greatest amount of work is done at the dead point, and this dead point has to be located in a proper relation to the cultivator and the surface upon which it is to operate, and the effect of the spring on either side of the dead point has to be adjusted and properly regulated, so that the beam will be elevated from the proper position to the proper position. Manufacturers of cultivators must for years have been aware, before the date of Wright's invention, of these devices in which a double action was had, such as door springs, jack knives and the like, but the contemplation of such devices never would have led to the Wright invention, and their existence no more suggested what Wright did than the existence of any other spring. As a matter of fact, what Wright did was not at all an obvious advance in the art, that is, obvious in the sense that any one could have made it by examining the art and pre-existing mechanism. The examination of the art would have led away from, rather than up to, the result which Wright reached.

Q. 5. Mr. Bates has stated in his deposition, that a radius bar might be substituted for the curved spring and roller placed in the

Wright patent so as to perform the same function, and he has made a sketch of the radius bar modification. Do you agree with him? And, in your opinion, what relationship exists between the particular structure shown in the drawings of the Wright patent, the radius bar modification and the defendant's cultivator?

A. I agree with Mr. Bates that the radius bar is a proper substitute for the curved end portion of this spring and the roller, and that it performs substantially the same function, and his sketch shows one form, suggested by the patent, in which the radius bar may be substituted. In order to obtain an increase of leverage, and thereby an increased lifting effect, the line in which the force of the spring acts must be shifted with reference to some dead point or fulcrum. I know of but two practical ways of producing this shifting bearing and increase of leverage, and both ways are described in the Wright patent. One way is by sliding contact, as by the movement of the springs or its arm along the periphery of the roller; and the other way is by articulating the spring, or its connections, with a radius bar or other pivoted device moving in a circle. This pivoted device or radius bar may be placed on the beam, or on a pipe box to which the beam is fastened, or the beam itself may be utilized, or it may be placed on the arched axle or other portion of the frame of the cultivator, the essential point in every case being that the movement of the beam shall cause or permit such a shifting of bearing as will change the line of the action of the force so as to change the leverage.

In the devices shown in Wright's patent, the roller is shown in one drawing on the beam, and in another on the arched axle, but, wherever placed, there is the same change of bearing and increase of leverage. In the radius bar modification shown by the Bates sketch, the radius bar is on the arched axle, but, as he says, it may be placed on the beam. In either case, there is the same change of bearing and increase of leverage. In the defendant's cultivator, the radius bar is on the arched axle, and there is the same shifting bearing and increased leverage.

In making this comparison, I have not forgotten to take into consideration the fact that the spring shown in the drawings of Wright's patent is shortened as the beam rises, but this is not essential to the invention or the operation of the spring, as is shown beyond doubt, from the fact that in the radius bar modification there is no shortening of the spring. The inventor says in the patent, that the radius bar modification is a substitute for the roller and curved end portion of the spring (with which devices the shortening of the spring occurs), and I agree with Mr. Bates that the inventor is correct in this statement. While the shortening of the spring may assist in the operation, it is not essential to the embodiment of the invention. Structures might be made in which the shortening of the spring was carried to such an extent as to be an important factor in the combination, but it is clear that the invention may be embodied without any shortening whatever.

Cross-Examination by L. L. Bond.

X Q. 6. Did not Mr. Bates make the radius bar of his sketch take the place of the wheel or roller, rather than the curve of the Wright spring?

A. Both, I think.

X Q. 7. The Monaghan spring is a lifting spring, is it not?

A. Yes.

X Q. 8. So far as the operation of the machine is concerned, what difference does it make whether you are cutting out an excess of cotton plants, or an excess of weeds?

A. Both operations are directed to the removal or disturbance of the soil, but in the case of the cultivator, the disturbance is practically continuous, while in the case of Monaghan a special act of the operator has to be performed to bring the hoes into operation in the ground. The normal position of the shovels of the cultivator are in the ground while the normal position of the hoes of Monaghan is above the ground.

X Q. 9. If you took the lifting spring out of the Monaghan machine it would be a cultivator, would it not?

A. It would not be a cultivator in the same sense as the cultivator described by Wright. It would not have an arched axle, it would not have any wheels; it would not have drag-bars capable of lateral movements; and spring or no spring, it could not be utilized for the same work.

X Q. 10. There are many cultivators which do not have those features, are there not?

A. I believe there are devices coming under the generic name of cultivators which have not got the features which I have enumerated, but the species to which the Wright patents relate necessarily have the enumerated features.

X Q. 11. Cultivator handles like those shown in the Monaghan patent and in the Wright patent are common appliances, are they not?

A. They are.

X Q. 12. Would it change the character of Hayden's machine to apply these common handles to the shovel beams?

A. It would not change the character of the machine, but the handles would be useless, as the beams are not pivoted in front, and can not have a pivotal lateral motion, and further, the lever, Q, would be locked, thus locking the springs, L, and depriving the handles of that freedom of motion which would be necessary.

X Q. 13. Is it not a common practice in the art to so construct cultivators that they may be used either as riding or walking cultivators combined?

A. I believe cultivators have been made which could be used either as riding or walking cultivators. I am not familiar with this class personally, however.

X Q. 14. If the lever, Q, was locked in its segment, that would lock the bar, *q*, and fix the position of the springs, L, in their relations to the beam?

A. Yes.

X Q. 15. And whether the springs are locked in position at their front end, and whether the shaft, U, was rocked by the lever, Q, either way the springs would change position in the slotted projections, M, to some extent, would they not?

A. Yes; there would be a slight movement of the spring within the confining staple. It would be a movement, however, which would be almost microscopic, and in no way would change the conditions of operation of the machine or of the character of the action of the spring upon the beam; as a matter of fact, the movement would be merely an incident of the operation of the machine without in any way affecting, beneficially or otherwise, the said operation.

X Q. 16. Do not the inner shovels of the Hayden machine have a lateral movement of some kind?

A. The patent describes a lateral movement for some of the shovels, which movement consists, as I understand it, in shifting laterally the part of the beam, or beams, which are attached to the frame of the machine. Exactly how this is accomplished is not clear from the specification and drawing.

Admission.

For the purpose of evidence to be used by the complainant as a part of its proofs in this cause, the defendant admits the following facts:

Admission.

In the suit pending in the Circuit court of the United States, for the Southern district of Iowa, wherein the Eagle Manufacturing Co. is complainant and David Bradley & Company defendant, and which suit was brought to restrain the infringement of the letters patent in suit herein, the defendant in this cause, the David Bradley Manufacturing Company employed counsel, took charge of and conducted the defense of said suit in the name of the said Bradley & Company and paid the expenses thereof. This was done by the defendant herein, the same as it would be done by it for any agent, branch house, or customer engaged in selling implements purchased of the defendants, if sued for infringement of a patent on account of selling such goods.

Signed this 9th day of January, 1889.

West & Bond,

Solicitors for Defendant.

STIPULATION.

Stipulation.

It is hereby stipulated by and between the parties to said suit that a copy of the depositions of E. A. Wright, E. P. Lynch, G. Watson French, and A. K. Raff, taken in the case of *The Eagle Manufacturing Company* v. *W. L. Miller, et al.*, in the Southern district of Iowa, except in so far as those depositions relate to the parallel-movement cultivators and patents, may be used by the complainant in evidence herein with the same force and effect as though said depositions had been taken herein; and, further, that for the purpose of completing the record, a copy of such depositions may be formally offered herein at any time, and made a part of the record.

NATHANIEL FRENCH,
Solicitor for Complainant.

WEST & BOND,
Solicitors for Defendant.

October 9, 1889.

Proofs.

The following proofs were offered in evidence in said cause this 23d day of October, 1889.

The complainant appeared by Nathaniel French, its solicitor, and the defendant, though not appearing, consented in writing to the introduction of said proofs, in so far as the same are material; and thereupon the complainant offered in evidence the final decree of the Circuit court of the United States, for the Southern district of Iowa in the case of *Eagle Mfg. Co.* v. *David Bradley & Co.*, which same is marked "Complainant's Exhibit Bradley Final Decree," and thereupon the complainant offered in evidence a stipulation entered into by defendant in regard to the testimony of E. A. Wright, A. K. Raff, G. W. French and E. P. Lynch, taken in the case of *Eagle Mfg. Co.* v. *Miller*, pending in the Circuit court of the United States, for the Southern district of Iowa, together with a copy of said depositions and the exhibits therein referred to.

The complainant also offered in evidence the admission of the defendant, that it conducted the defense in the said suit of *Eagle Mfg. Co.* v. *David Bradley & Co.*; and also a copy of Letters Patent No. 226,833, to B. C. Bradley, dated April 27, 1880; and theroupon the complainant announced that its case was closed.

The defendant herein hereby consents to the foregoing proceedings.

West & Bond,

For Defendants.

Notary's Certificate.

State of Iowa, Scott County, ss.

I, Effie E. Moran, a notary public in and for said county, do hereby certify that the foregoing proofs were offered in evidence before me, this 23d day of October, 1889, and that the defendant consented to the said proceeding, as appears by its written consent hereinbefore set out.

And I further certify that I am neither attorney nor of counsel for any of the said parties in said deposition or caption named, and am in no wise interested in the result of this cause.

In testimony whereof I have hereunto set my hand and notarial seal, this 23d day of October, A. D. 1889.

Effie E. Moran,
Notary Public,
Scott county, Iowa.

An

Complainant's Exhibit of Case against David Bradley & Co.

Circuit Court of the United States, Southern District of Iowa, Central Division.

Eagle Manufacturing Company,
v.
David Bradley & Co. } *Equity.*

Bill.

To the Honorable the Judges of the Circuit Court of the United States, in and for the Southern District of Iowa.

Complainant's Exhibit of case against David Bradley & Co.

The Eagle Manufacturing Company, a corporation organized under the laws of the state of Iowa, and existing in the state of Iowa, brings this bill against David Bradley & Co., a corporation organized under the laws of Iowa, having its principal place of business at Council Bluffs, Ia., and a resident and inhabitant of said state in the Southern district thereof, and citizen thereof.

And thereupon your orator complains and says that Edgar A. Wright, was the true, original, and first inventor of a certain new and useful improvement in cultivators not known or used before his invention thereof, and not, for more than two years prior to the date of application for a patent therefor, in public use or on sale.

And your orator further shows unto your Honors, that the said Edgar A. Wright so being the inventor of said improvement, and being citizen of the United States aforesaid, made application to the proper department of the Government of the United States for letters patent in accordance with the then existing laws of Congress, and having duly complied in all respects with the conditions and requisitions of said laws on the 7th day of June, 1881, letters patent of the United States No. 242,497, signed, sealed and executed in due form of law, for his invention were issued and delivered to the aforesaid Edgar A. Wright, whereby there was secured to the said Edgar A. Wright and to his heirs, legal representatives and assigns, for the term of seventeen years from the 7th day of June, 1881, the full and exclusive right of making, using and vending to others to be used, the said improvement in Cultivators.

And your orator further shows that a description or specification of the aforesaid improvement was given in the schedule to the aforesaid letters patent annexed, accompanied by certain drawings referred to in said last mentioned schedule and forming part of said letters patent. The said letters patent, and the said specification thereto annexed (which, or an exemplified copy of which your orator will produce, as your Honors may direct,) were duly recorded in the patent office. And your orator further shows that said letters patent were duly transferred and assigned by said Edgar A. Wright to your orator on June 13th, 1881, whereby your orator became and is the owner of said letters patent. The said assignment was duly recorded, and the same or a certified copy thereof is ready in court to be produced.

And your orator further shows that the said letters patent were sustained and held to be valid in your Honors' court for the Southern district of Iowa, Eastern Division, on final hearing in equity in a suit by your orator against the Davenport Plow Co.

And your orator shows that it has extensively applied the said several improvements to practical use, and has been, and but for the infringement hereinafter complained of and like infringements by others, your orator would still be in the undisturbed possession, use and enjoyment of the exclusive privileges secured by the said letters patent, and in the receipt of the profits of the same.

And your orator further shows unto your Honors, as it is informed and believes that the said defendant herein named, well knowing all the facts hereinbefore set forth, is now selling spring cultivators, in some parts thereof substantially the same in construction and operation as in the said letters patent mentioned, the exclusive right and privilege to make and use which, and vend

the same to others to be used, is thus by law vested in your orator.

And so it is, may it please your Honors, that the said defendant, as your orator is informed and believes, without the license of your orator, against its will and in violation of its rights, has sold and intends to continue still to sell the said improvements within the Southern district of Iowa and elsewhere in the United States, and refuses to pay to your orator any of the profits which it has made by such unlawful sales, or to desist from the further infringement of said recited letters patent; all of which acts and doings are in violation of the exclusive rights and privileges, so as aforesaid vested in your orator under and by virtue of said recited letters patent, and are contrary to equity and good conscience, and tend to the manifest injury of your orator in the premises.

And your orator prays that the said defendant may answer the premises, but not under oath, and that it may be decreed to account for and pay over the income or profits thus unlawfully derived, or which might have been derived from the violation of the rights of your orator as aforesaid, and your orator prays that your Honors, upon entering of the decree in favor of your orator against said defendant for infringement, as above prayed for, may also proceed to assess, or cause to be assessed, under your directions, as well the profits or income to be derived therefrom, to be accounted for as aforesaid, as also, in addition thereto, the damages sustained by your orator by reason of such infringement, and that your Honors may increase the actual damages so assessed to a sum equal to three times the amount of such assessment, under the circumstances of the wilful and unjust infringement committed by said defendant as hereinbefore set forth; and further, that the said defendant may be restrained from any further violation of the rights of your orator as aforesaid, your orator prays that your Honors may grant a writ of injunction issuing from and under the seal of this Honorable court, or issued by one of your Honors, perpetually enjoining or restraining the said defendant, its clerks, attorneys, servants, agents and workmen, from any further construction or sale, or use in any manner of said patented improvements, or any part thereof, in violation of the rights of your orator as aforesaid. And your orator further prays that a provisional or preliminary injunction be issued, restraining the said defendant from any further infringement of said recited letters patent, pending this cause, and it prays for such other relief as the equity of the case may require, and to your Honors may seem fit.

May it please your Honors to grant unto your orator not only a writ of injunction conformable to the prayer of this bill, but also a writ of subpœna of the United States of America, directed to the said David Bradley & Co., commanding it on a day certain, therein to be named, to appear and answer unto this bill of complaint, and to abide and perform such order and decree in the premises as to the court shall seem meet, and may be required by the principles of equity and good conscience.

NATH. FRENCH,
Solicitor for Complainant.

GEO. H. CHRISTY,
Of Counsel.

UNITED STATES OF AMERICA, }
SOUTHERN DISTRICT OF IOWA. } ss.

Before me, the subscriber, duly authorized to administer oaths, personally came E. P. Lynch, President of the complainant in the foregoing bill named, who, being duly sworn, deposes and says that so far as the statements herein contained are within his own knowledge, they are true, and so far as they are derived from the information of others he verily believes them to be true. And he further says that he verily believes the said Edgar A. Wright, in said bill named, to be the original, true and first inventor of the new and useful improvement which is described in said letters patent granted to Edgar A. Wright, and mentioned in the foregoing bill. And further, that the said deponent verily believes that the title of the said complainant is as set forth in said bill.

E. P. LYNCH.

Sworn to and subscribed before me, this }
4th day of December, A. D., 1887. }

[NOTARIAL SEAL.] NATH. FRENCH,

Notary Public, Scott Co., Ia.

REPLICATION.

U. S. CIRCUIT COURT, SOUTHERN DISTRICT OF IOWA CENRRAL DIVISION.

The Eagle Manufacturing Company
v.
David Bradley & Co.
} *In Equity.*

The replication of the Eagle Manufacturing Company, complainant, to the answer of David Bradley & Company, defendant.

The repliant, saving and reserving to itself, all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto says that it will aver and prove its said bill to be true, certain and sufficient in the law to be answered unto; and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by this repliant; without this that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be, ready to aver and prove, as this Honorable court shall direct; and humbly pray, as in and by its said bill it has already prayed.

NATH FRENCH,
Solicitor for Complainant.

GEORGE H. CHRISTY,
Of Counsel.

ASSIGNMENT.

Whereas, Edgar A. Wright of Davenport, Iowa, has obtained letters patent of the United States, for a new and useful improvement in Cultivators, which letters patent bear date June 7th, 1881, No. 242,497.

And whereas, the Eagle Manufacturing Company of Davenport, Iowa, is desirous of acquiring said patent.

This indenture witnesseth, that for and in consideration of one dollar, the receipt of which is hereby acknowledged, I have assigned, sold and set over, all the right, title and interest which I have in said invention, as secured by said letters patent to and in the whole United States, the same to be held and enjoyed by said Eagle Manufacturing Company for their own use and behoof, of their legal representatives to the full end and term for which said letters patent are granted, also re-issues, as fully and entirely as the same would be held and enjoyed by me, had this sale not been made.

In witness whereof I hereunto set my hand and seal, this 13th day of June, 1881.

[SEAL.] E. A. WRIGHT.

In presence of Geo. H. French.

Testimony of witnesses and other evidence taken on behalf of complainant at Chicago, February 29 and March 1, 1888, pursuant to agreement.

Complainants represented by George H. Christy and Nathaniel French.

Defendant represented by West and Bond.

(Complainant offered in evidence copy of Letters Patent No. 242,497, to E. A. Wright, dated June 7, 1881, which is marked by the notary "Exhibit A".)

(Complainant also offered in evidence a certified copy of the assignment of said letters patent by E. A. Wright to the complainants, and which is marked "Exhibit B".)

CYRUS KEHR, being first duly sworn on behalf of the complainant, testified as follows:

Direct Examination by Mr. French.

Q. 1. State your name, age, residence and occupation.

A. Cyrus Kehr; Chicago, Illinois; age, 31 years; occupation, solicitor of patents and mechanical expert.

Q. 2. State, generally, the opportunities you have had for familiarizing yourself with mechanical questions, and your experience in dealing with such questions, and particularly as they arise in connection with patents for inventions.

A. During the last eight or nine years I have devoted myself to the study of mechanics and patent law, and to the work of soliciting patents, and during that time I have also frequently testified as expert in patent causes.

Q. 3. Have you examined and do you understand complainant's Patent No. 242,497, dated June 7, 1881, granted to Edgar A. Wright?

A. I have examined said patent and understand the same.

Q. 4. Have you examined and do you understand the construction of the cultivator referred to in the affidavit of E. P. Lynch, which affidavit was used in this cause in an application for a preliminary injunction, and which affidavit had attacded to it drawings of the said cultivator, and which said cultivator is marked "Exhibit Defendant's Cultivator."

A. I have examined said cultivator and understand its construction.

Q. 5. Directing your attention to the complainant's said patent and to the invention described therein, and referred to in the first four claims thereof, please state what you understand to be the invention referred to therein, and whether or not you find substantially the same invention in the cultivator marked "Exhibit Defendant's Cultivator," and give your reasons for any opinion you may express.

A. I understand said invention to consist in the combination of the cultivator frame, a pivoted drag-bar or beam, and a spring, said combination being characterized by the fact that said spring changes or shifts its bearing or connection, when said beam ascends from the working position, so as to maintain or increase the lifting effect upon said beam, notwithstanding the fact that the tension of said spring is reduced as said beam ascends.

Referring to said exhibit, I find that it contains said invention, that said elements are contained in said exhibit, combined and operating in substantially the same manner, for the same purpose, and with the same result. I find that the subject matter mentioned in each of said four claims in complainant's patent is embodied in said exhibit.

Said exhibit is a two-wheeled cultivator, having a frame, arched axles, and pivoted or hinged beams combined, with practically no variation from the cultivator described in complainant's patent, and, with the elements named, there is combined a lifting spring which operates upon the beam in substantially the same manner as called for by complainant's patent. In said exhibit, when the beam is in the working position the lifting effect upon the beam is reduced, or substantially removed, and when the beam ascends, the lifting effect of the spring upon the beam is maintained or increased. And said spring is so combined with these parts as to shift or change its bearing or connection. As I remember said exhibit, the lifting effect of the spring upon the beam is materially increased as the beam ascends.

Q. 6. Please state more in detail the method in which the particular device shown in complainant's patent operates, and compare the mode of operation with "Exhibit Defendant's Cultivator."

A. In the particular form of the device shown in the drawings of said complainant's patent, the spring is interposed between the frame and the beam or drag-bar, one end of the spring being secured either to the frame or the drag-bar, and the spring be-

ing arranged to move along a roller. This roller in this case is used for the purpose of reducing friction. The spring is so shaped and arranged with reference to the other parts, that the force which it exerts when the beam is in the working position can have little or no effect in the way of lifting the beam, but so that, when the beam is partially elevated, its force, or the direction of its force, is so changed as to draw on the beam, and this change of direction continues, or is increased, until the beam is drawn as high as desired. This change in direction in this particular mechanism is due to the change in bearing of the spring. The line through which the force of the spring acts changes with reference to the fulcrum, which is the axle or pivot of the beam, as the curved spring turns about the roller.

While the inventor shows the particular form in his drawings as I have stated, his invention, as I understand it, embraces other forms. An examination of the specification and claims indicates this. On page 2 of the specifications, beginning at line 120, I read the following:

"Among other arrangements which may be substituted for that shown, is that of having a radius bar or link introduced between the spring and beam as a substitute for the curved spring and roller.

In this construction there is, of course, an absence of the sliding or rolling contact.

On page 1 at line 65 the specification says: "The accompanying drawings illustrate one manner of embodying my invention." This it would seem is an intimation that he had other forms in view.

On page 2, at line 99, the specification says:

"While it is believed that form of spring represented in the drawings is preferable to all others, the invention includes, as before stated, any spring so combined with the beam or its equivalent that a greater or stronger lifting force or effect is exerted upon the beam when the latter is above the operative position than when it is in use; or, in other words, the invention includes any and all beam-lifting springs, the effect of which is lessened or avoided when the beam descends to an operative position."

In said exhibit, the lifting spring is not connected directly with the beam, but the action of the spring is transmitted by a rod inserted to operate as a link. The spring has one end secured rigidly to an arm projecting from the side of the arched axle above the pivot of the beam. The other end of the spring is linked to a short pivoted bar or lever, with a tendency to hold the latter in a vertical position. The link which connects with the plow-beam is joined by its upper end to the upper portion of the pivoted lever to which the spring is linked. When said pivoted lever is in a vertical position, the link connecting with the beam is, of course, at its highest point, and the beam is elevated. The connection of the free end of the spring with said lever, is above the pivot of said lever, and at such point as to place the line through which the spring exerts its force, farthest from said pivot, when said lever is in said vertical position. When said lever is thrown to or towards the horizontal position, by the descent of the beam, the connection of the free end of the spring with said lever is carried over beyond the pivot, and the line through which the spring exerts its force is carried closer to the pivot, consequently the theoretical arm of the lever upon which the spring exerts its power is reduced, with the result of a transmission of less power to the beam, notwithstanding the fact that the tension of the spring has been increased. When the beam ascends from the horizontal position the action of the spring transmitted to the beam is of course increased or maintained, in the manner opposite to what I have stated is the action in the descent.

The fact that this spring is located above the beam and not connected directly therewith makes no difference, in my judgment, in considering the question whether said exhibit embodies complainant's invention. As I have already stated, the inventor has provided in his specification for a variety of applications of the spring, and has specifically stated that a radius bar or link may be introduced in lieu of the roller, and said exhibit contains such a radius bar or link. I do not consider it a material mechanical difference to locate defendant's spring above the beam and insert a link to transmit the power exerted by the spring to the beam. The spring and the pivoted arm or lever upon which the spring acts might as well be located closer to the inner end of the beam and connected directly thereto. No change of action is produced by elevating said spring. The fact still remains that the bearing or connection of the spring is shifted. To illustrate the position that there is no material change made by elevating said spring and radius bar in defendant's machine, I may state that it would be no departure from complainant's patent as shown in the drawings in figure 2, for example, to make the beam shown therein a false

beam, and pivoting the real beam at a short distance or a considerable distance below said false beam, and joining the two by a link. In the supposed case, the action of the spring upon the beam would not be changed.

Cross-Examination by Mr. Bond.

Q. 7. What parts of the defendant's machine do you include under the name frame?

A. The most accurate statement perhaps is that the frame comprises the tongue, the arch of the axle, and the braces extending forward and upward from the lower portion of the arch of the axle to the tongue.

Q. 8. Do you not understand that with exception of the spring and its bearing that the cultivator shown in the complainant's cut and the one shown in the cuts of the defendant's machine are forms of cultivators which were well known long prior to the date of the complainant's patent?

A. I do not know when the arched axle was first introduced, but I presume it was prior to complainant's patent.

Q. 9. Do you not understand that all that Wright did was to apply his spring to a then well known form of cultivator?

A. Yes, so far as the other parts go, he lays no claim to novelty in the patent.

Q. 10. In the latter part of your answer to Q. 5 referring to the defendant's machine you say: "And when the beam ascends the lifting effect of the spring upon the beam is maintained or increased. And said spring is so combined with these parts as to shift its bearing or connection." Please explain how that is done in defendant's machine.

A. The connection of the links, which join the free end of the spring to the short pivoted lever, is moved nearer to or farther from a line passing through the free end of the spring and the pivot or fulcrum of said pivoted lever.

Q. 11. You consider that a mechanical change of bearing, do you?

A. I do.

Q. 12. Would you understand that if a party was lifting a weight by an ordinary crow-bar that the bearings changed as his hand went down?

A. Down how or where?

Q. 13. In operating an ordinary crow-bar there is a fulcrum, a weight to be raised, and the power is usually applied by pressing on the long arm of a crow-bar by hand; supposing the crow-bar to stand at an angle of 45, would you understand that the bearing of the crow-bar were mechanically changed for each change of position of the long arm of the crow-bar, as the operator pressed it down to a horizontal position?

A. No.

Q. 14. You could insert a dozen imaginary lines between the angle of 45 and the horizontal position, could you not?

A. Yes.

Q. 15. As a matter of fact, isn't the changes of bearing or connection, so far as the spring in the defendant's machine is concerned, wholly imaginary?

A. It is not.

Q. 16. I would be glad if you would explain so that the court would understand it, how the spring in the defendant's machine changes its bearing or connections. Will you please do so?

A. The short-pivoted lever, which I have mentioned as having the free end of the spring joined to it by links, stands at one time in a vertical position, so that the said connection is at a certain

distance from the fulcrum upon which said lever turns, and at another time, when said lever has changed its position towards or to the horizontal over its fulcrum, said connection is in, or almost in, a line passing through the free end of the spring and said fulcrum, so that the connection or bearing of said spring is now nearer said fulcrum, or has been shifted or changed from its former position; in other words, the spring in the second instance now draws through, or nearly through the fulcrum, having changed from a direction at some distance from said fulcrum.

Q. 17. Are we to understand from that that you consider the lever in the defendant's machine the equivalent of the spring in the complainant's machine?

A. No, sir.

Q. 18. In your direct-examination you stated that the spring itself was so combined in the defendant's machine "as to shift or change its bearing or connection," and it was this I wished you to explain, and will you now please explain it without going off onto some other part of the machine?

A. Without a more definite question I do not see what to add by way of explanation to what I have already said upon this point.

Q. 19. I asked you in regard to a spring, and you explained in regard to a lever which is interposed between the spring and the beam; your statement was that the spring changed its bearings in the defendant's machine, and that was what I wished you to explain—how the spring changed its bearing.

A. I have already stated that it changes its bearing when the point in the pivoted lever mentioned, to which the free end of the spring is connected, moves nearer to, or farther from, the fulcrum of said lever. When said lever is in the vertical position, the bearing or connection of the spring is mechanically at a certain distance from the fulcrum, that is to say, a line passing from said connection to the free end of the spring would be a certain distance from said fulcrum; and when said lever is turned, the line extending from said bearing or connection to the free end of the spring is much nearer to, or extends through, the fulcrum of said lever.

Q. 20. What is a mechanical bearing?

A. Usually a point, real or theoretical, upon which some force acts. The definition may be more comprehensive, but I think this statement covers it in the main.

Q. 21. Does not a theoretical bearing mechanically cover a little too much?

A. That depends upon what scope you apply to the word theoretical.

Q. 22. The scope applied to the word theoretical is to an imaginary bearing instead of an actual one. In the defendant's machine, is not the bearing of the spring upon a pin in the lever with which one end of the chain is connected, the opposite end of the chain being connected with the spring, are not those two points at equal distances apart in all positions of the defendant's machine? I am now speaking of actual bearings and not theoretical ones.

A. Said links do extend from the free end of said spring, and the inner one is joined to a pin in said lever, and the distance between said end of the spring and said pin remains constant, and said pin does not change position or shift upon said lever, when said lever is considered by itself as a material thing.

Q. 23. In the complainant's machine, is not the spring so arranged that its power and its mode of operation is to shorten the spring itself in relation to the bearing point of the spring on the anti-friction roller, and the fixed point of the spring as shown in figures 4 and 5 of the complainant's patent?

A. . In the drawing in complainant's patent the device is shown, so organized as that the distance between the roller and the fixed attachment of the spring lengthens and shortens. The action of the spring in raising the beam by a maintained or increasing lifting effect, is not due wholly to this shortening of the spring. In fact, I consider said shortening in the particular form shown in the drawings as of subordinate consequence. In said form the fact that the lifting effect of the spring upon the beam is maintained or increased, as the latter ascends, is due, I think, principally to the change of direction in which the spring exerts its force. At one time—when the beam is in substantially the horizontal position—the spring, although the tension is greatest, exerts it force in a line extending through, or nearly through, the fulcrum. Under this condition the spring may, by reason of its tensions, exert tons of pressure with little or no effect. As the beam as-

cends, the line through which said spring exerts its force moves farther and farther from said fulcrum, and consequently the effect of said force is increased.

Fearing that I may be misunderstood, I again call attention to the paragraph on page 2 of the specifications, beginning at line 120, in which it is stated that a radius bar or link may be introduced as a substitute for the roller. In this form the spring cannot shorten.

Q. 24. And if you apply the radius bar to the form shown in figure 5, it wouldn't work, would it?

A. It would.

Q. 25. Referring now to figure 3 of complainant's patent, supposing the part there marked d2 was a link or radius bar, would the spring then work, according to the supposed idea of the patent, with increasing force?

A. The direction of the radius bar might require change in angle if substituted for said part small d2. But I do not think there would be difficulty in making the substitution.

Q. 26. Do you think, if the change supposed in my last question were made, that the machine would still be in accordance with the patent, and contain the inventions therein described and claimed?

A. If the change were made so that the parts would operate satisfactorily, I answer yes.

Q. 27. You mean by that that every spring that operates satisfactorily is a Wright machine?

A. No, sir.

Q. 28. Then what do you mean by your last answer?

A. I mean that the parts must be combined to allow the force of the spring to apply as Wright contemplates in his patent.

Q. 29. If the part marked d2 in figure 3 of complainant's patent were hinged at or about the point d1, so as to form a link or radius bar in its connection with the beam, would such an organization contain the Wright invention?

A. That would depend again upon the angles at which the part d2 were allowed to stand and upon the form of the spring. The radius bar might be substituted in such manner as that the machine would not operate at all.

Q. 30. Is that the best answer you can make to my last question?

A. I might add that the radius bar or link may be substituted for the part d2 so as to make an operative machine and embody the Wright invention.

Q. 31. Is not the principle and theory of construction upon which the Wright machine is made, and upon which it operates, that the spring itself shall be so formed and combined with the beam and frame of the machine that the spring itself shall be a combined spring and lever, so that what it loses in its spring-power it will gain in its leverage as the beam rises, or loses as it descends?

A. No.

Q. 32. Then what is the principle and theory of construction of the Wright spring?

A. The theory of the spring may be stated to be, that it shall be so combined with the frame and the pivoted beam or drag-bar as that when the beam ascends the bearing or connection of the spring shifts or changes, whereby its effect upon the beam increases or decreases as the beam ascends or descends.

Q. 33. What is the lever in complainant's machine?

A. The lever in complainant's machine is a line extending from the outer end of the beam or drag-bar forward to its fulcrum, and thence by the shortest distance to the line through which the power of the spring acts.

Q. 34. Do you, as a mechanical expert, wish the court to understand that an imaginary line is an actual lever?

A. I do not.

Q. 35. Why, then, do you say that an imaginary line is the lever in complainant's machine?

A. Because it is true.

Q. 36. Mechanically stated, is not your proposition a mechanically impossibility?

A. I do not understand it.

Q. 37. The line which you describe as the lever in complainant's machine is thin air, and nothing else, is it not?

A. In the particular form of complainant's machine shown in the drawings, a portion of said line is wood or iron, or both, and a portion is imaginary.

Q. 38. As a matter of fact, is there any lever at all in the machine shown and described in the complainant's patent?

A. There is.

Q. 39. Where, and what is it?

A. The plow-beam, with its handle, form a lever. The tongue may also be regarded as a lever.

Q. 40. Is not the plow-beam the weight to be raised?

A. If you mean the weight to be raised by the spring, I say yes.

Q. 41. Then the plow-beam cannot be a lever within any of the combinations covered by the first four claims of complainant's patent, can it?

A. I do not see why not.

Q. 42. The plow-beam with its handle is just as much of a lever without the spring as it is with it, is it not?

A. Without the spring it is manifestly capable of being used as a lever.

Q. 43. But in that form it can have no lever action in aiding to lift itself, can it?

A. Do you mean when disconnected from the spring?

Q. 44. I mean either, or both ways.

A. I understand that the beam has no lifting power in itself.

Q. 45. What lever action does the tongue have in the operation of complainant's machine?

A. To answer this question, I refer to figure 1 of the drawing in complainant's patent. The tongue, such as is shown in said figure, usually extends forward between the horses, and has its forward end supported in the neck-yoke so that its position with reference to the ground, its distance from the ground I mean, is practically constant. The rear end of the tongue extends rearwardly beyond the axle of the machine, and rests upon said axle, and is secured rigidly thereto. The outer end has two hooks for supporting the plow-beam, when it is desired to secure the latter in the elevated position to a greater extent than the springs secure them. When the plow-beams are thus supported, the tongue forms a lever, the weight being the plow-beams, the axle being the fulcrum, and the power being the neck-yoke and the necks of the horses. It has a further lever action in the machine illustrated by said figure 1, in preventing the arched axle from turning out of the vertical position.

Q. 46. This action of the tongue has no effect on the operation of the spring, has it?

A. Not directly.

Q. 47. Does it indirectly, other than holding the axle up?

A. This action of the tongue renders the frame stationary, with reference to the plow-beam, and makes the connecting of the spring in the desired way possible.

Q. 48. The same form of tongue extending rearwardly and provided with hang-up hooks is very old in the art, is it not?

A. I understand it to be so.

Q. 49. In answer to one of my previous questions, you stated that you found in the complainant's machine, as levers, the tongue and the beam; are these all of the levers which you find in the complainant's machine?

A. I understand said question to relate broadly to levers in complainant's machine, and I cited the plow-beam and handle as constituting a lever, and I cited the tongue as constituting another lever. In making said answer I had no reference to the spring. If I understood the question correctly, I now answer further, that there is also a lever in the wheel shown in said figure 1.

Q. 50. What has the lever in the wheel to do with lifting the plow-beam?

A. Nothing.

Q. 51. Do you find any more levers in the complainant's machine?

A. That relate to the lifting of the plow-beam, or not?

Q. 52. The question was a general one, but if you find any that relate to the lifting of the plow-beam, I would like to have you point them out.

A. I find no others.

Q. 53. In the complainant's machine, then, the lifting effect results from the direct action of the spring, does it not?

A. It results from lifting by the spring, but I will not say from a direct lifting, because the term direct is indefinite.

Q. 54. If there is no lifting lever in complainant's machine, there can be no fulcrum, can there?

A. Certainly not.

Q. 55. In the defendant's machine the action of the interposed lever is simply a crank action, is it not?

A. I do not regard it so.

Q. 56. Why?

A. Because said lever is not in the form of a crank.

Q. 57. It has a journal and a projection traveling in the arc of a circle, has it not, in the arc of a circle which passes from what is known in crank action as the neutral line or dead center, and from that to the line of its greatest power, to-wit: an angle of 90 degrees from the neutral or dead center line?

A. It is a substantially straight bar turning upon a fulcrum through the arc of a circle, as stated in the question.

Q. 58. Does not the chain with which the spring is connected with this lever, form the exact counterpart of a crank pitman?

A. This chain is composed of several links, and is, therefore, jointed or flexible, and is serviceable only in pulling, while the pitman is usually a solid bar or shaft, serviceable in pushing or pulling.

Q. 59. In foot-powers, the pitman is frequently a chain acting only in one direction, is it not?

A. It might be in forms where the power is applied only by treading downward between the fulcrum and the pitman. I do not now recall any such case in which the pitman was not a single piece.

Q. 60. In the defendant's machine, the connection between the spring and the interposed lever might as well be a single bar as a chain, might it not? Particularly if a slight bend were given in the middle.

A. Yes. At any rate, if the connections were also made sufficiently free.

Q. 61. When the plows are in the ground or working position, the connecting chain or pitman lies in the neutral or dead center line, does it not?

A. Nearly so, or quite, I have forgotten which.

Q. 62. And as the lever rises, the action of the spring upon the lever increases, just exactly as it would if the lever were a true crank, will it not?

A. Yes, if the connections were made in the same manner.

Q. 63. Then why is the action of the interposed lever in the defendant's machine a true crank action?

A. When we consider only the range of motion of which the lever in defendant's machine is capable, its action and the action of a crank, substituted for it, would be similar. In speaking of a crank action, we usually have in mind an action involving a complete rotation.

Q. 64, Is it not a common expedient in mechanics, for producing a reciprocating movement, to connect a crank having a short arm and a rotary movement, with a crank, having a longer arm, so that the one having the longer arm can only go back and forth, instead of going entirely around, while the one with the short arm rotates?

A. Such a construction is well known.

Q. 65. Then, in order that a thing may be a crank, it is not essential that it turn clear round, is it?

A. No, it may oscillate.

Q. 66. As a matter of fact, is not the similarity between the complainant's and the defendant's machine solely due to the fact that both machines have springs?

A. Yes. If either one had no spring and the other had, they would not be similar.

Adjourned to to-morrow morning at 10 o'clock.

MARCH 1, 1888.

Pursuant to adjournment, counsel met this morning at 10 o'clock.

Cross-examination of Cyrus Kehr continued.

Witness desires to continue his answer to the last question:

The similarity is due to the fact that the two machines contain a spring embodying the same principle. I do not mean to say that any manner of spring in defendant's device would make it similar to the device covered by complainant's patent.

Q. 67. What is the principle that you consider to be embodied in both complainant's and defendant's machine as alluded to in your last answer?

A. A combination of the following parts: A cultivator frame, a drag-bar pivoted to said frame, and a spring, the combination being characterized by the fact that the parts are so disposed as that the spring changes or shifts its bearing, when the beam ascends from the working position, whereby the lifting effect of the spring upon the beam is maintained or increased as the beam ascends, while at the same time the tension of the spring is reduced.

Q. 68. Do you understand that the tension of the spring is in fact reduced in complainant's machine?

A. I do.

Q. 69. And how, in the complainant's machine, is that reduction of tension supplanted or supplemented to maintain or increase the working force?

A. If the question refers to the particular form of machine shown in the drawing of complainant's patent, I answer that the loss in tension is compensated by the theoretical shifting of the bearing of the spring; in other words, by the change in direction in which the spring exerts its force. I may also add, that if the former question referred to the particular form of machine shown in the drawings of complainant's patent, that the portion of the spring remaining between the roller and its fixed connection may, or may not, undergo a reduction of tension. I should think that even that form might be so constructed that the tension of that portion of the spring would undergo a reduction as the drag-bar ascends.

Q. 70. I have not understood that the complainant had any other machine than the one shown in the drawing and described in the specification of the patent; have you, in any of your testimony, referred to any machine as the complainant's machine, which was not the machine shown in the drawing?

A. I think in all my answers, when the question referred broadly to complainant's machine, I answered with reference to any form of machine which would come within the scope of complainant's patents, considering the drawings, the specifications and claims together. I answered in this way unless the question appeared to me to be directed to the drawings alone, or, I should say, to the form shown in the drawings. I think, in a few cases, I stated that I assumed the answer referred to the particular form shown in the drawing, and then made answer accordingly.

Q. 71. Do you understand that, as an expert, you have a right to consider any machine which, in your opinion, contains the principle of the machine shown in complainant's patent; that it is to be considered, when you are experting the complainant's patent as to the principle, structure, and operation of the devices shown and described, as the same thing?

A. I understand, that as an expert, I have the right to have in mind the invention described in the patent, and answer questions with reference to what I take said invention to be from a study of the drawings, specifications and claims.

Direct Examination by Judge French.

G. WATSON FRENCH, being first duly sworn on behalf of complainant, testified as follows:

Q. 1. State your name, age, residence and occupation?

A. G. Watson French; 30 years old; Davenport, Iowa; Vice President of the Eagle Manufacturing Company.

Q. 2. What is the capital stock of the Eagle Manufacturing Company, and in what business is it engaged?

A. $200,000; manufacturer and selling of agricultural implements.

Q. 3. Is there any implement of which you sell especially large numbers?

A. Yes, cultivators.

Q. 4. Do you sell cultivators with springs which act with increasing effect to lift the beams, as the beams are raised?

A. Yes.

Q. 5. Have you ever made, and sold in the regular course of your business to your dealers and customers, spring cultivators of the particular kinds shown in the drawings of the patent to E. A. Wright, number 242,497, I mean by that, cultivators with springs of that particular form and construction; and if you have sold such cultivators, as before stated, please mention to what extent?

A. We have made and sold about 15 to 20 thousand of said cultivators, to our regular customers, in the course of our regular business.

Cross-Examination by Mr. Bond.

Q. 6. During what years or seasons did you make and sell cultivators containing the spring shown in the complainant's patent, 242,497?

A. From 1879 to 1885.

Q. 7. Why did you quit?

A. Our superintendent decided that a spring acting on a pipe-box with projecting arm was more desirable to our company, and he changed it accordingly.

Q 8. So far as you know, were cultivators, having on then the Wright spring, satisfactory to the firms that used them?

A. Yes.

Q. 9. Did you have any complaint, or know of any firm taking them off?

A. No.

Q. 10. What form of spring are you now using on your cultivators?

A. The form shown in the circular which I give now to the notary to mark for identification, marked "Circular, Golden Eagle Cultivator, G. W. French's deposition."

Q. 11. Do you consider your present machine a better one than the one shown in the Wright patent?

A. Yes.

Q. 12. Do you make any other style or kind of cultivator than the one shown in the circular just produced by you?

A, Yes, we make a tongueless cultivator and a combined riding and walking cultivator.

Q. 13. How have the sales of the lifting-spring cultivators, like those of the Wright patent, and of the circular, compared or averaged with the sales of the other forms of cultivators made and sold by your company?

(Objected to as immaterial, and not cross-examination.)

A. The sales of the spring cultivators have increased much more largely than the cultivators we made without springs.

Q. 14. How do they average as to numbers made and sold?

A. I couldn't give the exact proportion without having our books to examine.

Q. 15. Give your best estimate.

A. Ninety-five per cent of all the cultivators that we have made in the past three years have been spring cultivators.

Q. 16. How was it before you adopted the new form of spring?

A. About the same, for the two years preceding the adoption of the new spring. The sale of cultivators without springs has been growing less and less every year.

Q. 17. Do you know a man by the name of Koutz living in Scott county, Iowa?

A. Yes.

Q. 18. Do you know of his having any trouble with the Wright spring?

A. No.

Q. 19. Do you know whether or not your company sent him any extra springs?

A. Not that I know of.

Q. 20. Do you know whether or not he had a cultivator with the Wright spring on it?

A. He bought one from us.

Q. 21. Do you know anything of the history of that machine after it passed into his hands?

A. Some attorneys went to see the cultivator, tried to get Mr. Koutz to testify that the springs were of no benefit; that is all I know of it.

Q. 22. Don't you know that the reason he gave for his refusal was that he was a friend of the company; that they had treated him well, and he did not want to hurt them?

A. No, sir.

Re-Direct Examination.

Q. 23. While your company was engaged in making cultivators with springs, such as are shown in the drawings of the patent mentioned, did the sale of cultivators with such springs increase or decrease from year to year?

A. They increased each year.

Re-Cross Examination.

Q. 24. Cultivators of this class were introduced by W. T. Brown, of Ohio, Deere, of Moline, and possibly others, before 1879, and from that date down, have not all manufacturers been advertising and canvassing for the sale of spring cultivators, and is not this the reason for increasing sales?

A. Cultivators sold by Brown, of Ohio, and Deere & Company in competition with our cultivators, did not have a spring with an increasing lifting effect and depressing effect, which our cultivator had, and which rendered them very popular with the trade. While the increase of cultivators may be due to the development in the country and the improvement in them, the increase in the sale of our cultivator we consider was due largely, if not entirely, to our peculiar spring.

Q. 25. Was not the spring which you adopted in 1885 a spring then well known to the trade?

A. No.

Q. 26. You know of the use of the spring shown in your circular exhibit before you used it on your machines, did you not?

A. Cultivators had been made previous to 1885 which had a long, upright coil spring; our spring consists of two springs to each gang, one, the long coiled spring, the other a short auxiliary spring. The short auxiliary spring was an invention new to the trade.

Q. 27. Of what use is the short spring?

A. To suspend the drag-bar while in operation in the ground, to regulate the depth of plowing and to assist in raising the gangs.

Q. 28. Is there any reverse or down pressure in the machine of the circular, when the shovels are in the ground?

A. It can be so adjusted as to give a down pressure by means of the long coiled spring.

Q. 29. Is it?

A. It is done so at the will of the operator in the field.

Q. 30. The lifting of the beam is accomplished by means of the long spring, is it not?

A. The long spring raises the beam and suspends it; the short spring can be so adjusted as to assist in raising the beam part of the way; when the greatest force is exerted by the operator, it acts.

Q. 31. The machine shown in the circular has, altogether, four springs, has it not?

A. Yes.

Q. 32. Do you understand that there are four springs in the machine shown in the Wright patent?

A. No.

STIPULATION.

The Eagle Manufacturing Co., }
v. }
David Bradley & Co. }

It is hereby stipulated that the cultivator brought into court by the complainant, on the hearing of the application for a preliminary injunction at Keokuk, and marked "Exhibit Defendant's Cultivator," was sold by the defendant prior to the filing of the bill herein, and is one of the cultivators such as the defendant is engaged in selling, and has been engaged in selling for several years; and that the same shall be considered in evidence for the final hearing; and also that the attached drawings show correctly the said cultivator.

EAGLE MANUFACTURING CO.,
By NATH. FRENCH,
Solicitor.

WEST & BOND,
For Defendants.

Complainant offers in evidence the full-sized cultivator mentioned in the deposition of Cyrus Kehr, and marked "Exhibit Defendant's Cultivator."

Complainant offers in evidence certified copy of the decree and the Exhibits B1 and B2 therein mentioned, which said decree is rendered in the case of *The Eagle Manufacturing Company* v. *The Davenport Plow Company*, in the Circuit court of the United States, for the Southern district of Iowa, Eastern Division, the same being marked "Exhibit Complainant's Davenport Decree and Exhibits."

Counsel for defendant objects to the introduction of the Exhibits B1 and B2 as a part of this record.

The complainant thereupon announces that it closes its *prima facie* evidence, and notifies counsel for defendant to proceed with all due diligence to take its testimony in defense, in order that the complainant may have time to take rebutting evidence with reference to the hearing at the May term of court.

EXHIBIT COMPLAINANT'S DAVENPORT DECREE AND EXHIBITS.

This cause came on at this term to be finally heard upon the pleadings and proofs, and was argued by counsel for the respective parties, and the pleadings and proofs having been duly considered, it is hereby this 8th day of September, 1887, ordered, adjudged and decreed as follows, viz: That the letters patent referred to in complainant's bill, being Letters Patent of the United States, granted unto Edgar A. Wright, for Improvements in Cultivators, No. 242,497, and dated June 7, 1881, and the Letters Patent of the United States granted unto said Edgar A. Wright, dated December 16, 1879, No. 222,767, for Improvements in Wheeled Cultivators, are good and valid patents, and the same are not anticipated by the patents offered in evidence by the defendant and described by name and number in the agreed abstract in this cause; and that the said Edgar A. Wright was the first and original inventor of the improvements described and claimed therein; and that the complainant became the owner thereof as alleged in its bill of complaint.

It is also found, ordered, adjudged and decreed that the defendant, by making and vending cultivators such as are shown in defendant's Exhibits B1 and B2, forming a part of the said agreed abstract, infringed upon all the claims of said letters patent No. 242,497 and upon the exclusive rights of the complainant therein; and also that in making and vending cultivators with improvements such as are shown in defendant's said Exhibit B1, defendant infringed upon the first, second, third, fourth, sixth, and eleventh claims of patent No. 222,767, and upon the exclusive rights of the complainant therein.

And it is further ordered, adjudged and decreed, that the defendant be perpetually enjoined and restrained from making, using or selling, machines substantially such as are described and claimed in said letters patent No. 242,497 and 222,767, and more particularly such as are shown by the said Exhibits B1 and B2, and from doing any act or thing in infringement of said patent, or either of them, or in violation of the exclusive rights of the complainant thereunder.

And it is also ordered, adjudged and decreed that the complainant do recover of the defendant the profits, gains and advantages that it has derived from the manufacture and sale of the said patented improvements, and also the damages which the complainant has suffered by reason of the said infringement by the defendant.

And it is further ordered, adjudged and decreed, that this cause be referred to E. E. Cook, Esq., of Davenport, Iowa, as special master, to ascertain, state and report to the court, an account of the aforesaid gains, profits, advantages and damages; and that the defendant attend upon the accounting and produce its books, vouchers and documents, as the master may direct.

And it is further ordered that the parties and master may apply, upon due notice, to the court, upon the foot of this decree, for such other and further order of instruction as may be necessary.

And it is further ordered, adjudged and decreed, that the complainant recover of the defendant the costs of this trial to be taxed.

(Signed) J. M. Love,
Judge.

CIRCUIT COURT OF THE UNITED STATES, SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

Eagle Manufacturing Company,
v.
David Bradley & Co.
} *In Chancery.*

STIPULATION.

It is hereby stipulated and agreed by and between counsel, that an order of Court may be entered at any time at or before hearing *nunc pro tunc*, appointing R. B. Whittlesey, Special Examiner in this cause, to take testimony on part of complainants for final hearing, and certify and return the same under the rules of Court appertaining thereto.

TESTIMONY IN REBUTTAL.

Examination of witnesses and other evidence on behalf of complainants, under the 67th Rule in Equity as amended, before R. H. Whittlesey, Special Examiner, at the Hotel Albert, corner of Eleventh street and University Place, in the city of New York, beginning at 11 o'clock A. M. on Tuesday, April 17, 1888, pursuant to notice.

Present: GEORGE H. CHRISTY, ESQ., and NATHANIEL FRENCH, ESQ., counsel for complainants, and L. L. BOND, ESQ., counsel for defendants.

Deposition of Henry L. Brevoort.

Henry L. Brevoort, Esq., a witness on behalf of the complainants, being duly sworn, testifies as follows in answer to interrogatories propounded to him by George H. Christy Esq., of counsel for complainants:

Q. 1. State your name, age, residence, and occupation?

A. Henry L. Brevoort; age, 39; resident of Brooklyn, N. Y., and by occupation an engineer.

Q. 2. Please state, generally, your qualifications, or rather opportunities for familiarizing yourself with mechanical questions, your experience in dealing with such questions, particularly as they arise in connection with patents for inventions, and your experience as an expert in patent causes; and also, more especially, as regards cultivators for agricultural use?

A. When I was a boy, I learned the trade of machinist, and after this for some years I operated a machine shop of my own. When I gave up this business, I devoted myself to designing and testing machinery, such as steam engines and the like. For the last thirteen or sixteen years I have been very frequently called upon to testify as an expert witness in suits relating to patents, and I have been so called, in between three and four hundred cases. I am acquainted with the structure of agricultural implements, having been called to testify in suits relating to hay-rakes, harrows, plows, mowing machines, and cultivators. I have during the last fifteen years, many times acted as a solicitor of patents before the patent office of the United States, and have had a large experience in the preparation of drawings, specifications, and models for various mechanisms.

Q. 3. Have you examined Letters Patent of the United States No. 242,49 , granted June 7, 1881, to Edgar A. Wright—being the patent sued on so as to understand the construction and operation of the invention described therein, and more particularly summed up in claims 1, 2, 3, and 4?

A. I have very frequently read and examined the patent, and I think that I understand the mechanism therein described, and its purpose and operation. I have also carefully read the claims referred to, and I think that I understand the invention set forth in the said claims.

Q. 4. Have you read, and do you understand the contents of United States Letters Patent No. 95,437, granted to H. N. Dalton, October 5, 1869,—"Defendant's Exhibit, Dalton Patent?"

A. I have very frequently read the patent, and I think I understand what the said patent describes and shows.

Q. 5. Please state, whether or not, in this "Defendant's Exhibit, Dalton Patent" now before you, you find the subject-matter of the invention of claims 1 to 4 of the Wright patent sued on, or any of them, and state your reasons for any opinion you may express?

A. I do not think that the Dalton patent does show the inventions of any of the claims of the Wright patent referred to in the question, these being claims 1, 2, 3, and 4, of the patent in suit. To make this opinion clear, I will state the reasons on which it is based, and in doing so, I will first briefly, give my understanding of what Wright describes and claims, so that I can compare his inventions, as I understand them, with that which Dalton shows and describes.

The Wright patent, on its face, is for an improvement in a certain class of machines, to-wit: cultivators. These machines, the patent says, are generally wheeled; they have vertically-swinging beams or drag-bars, and an arched axle capable of passing over the standing corn. To this class of machines the invention is applicable, and the invention consists in applying lifting-springs so that they exert upon the beams a maximum power or strain when the latter are above an operative position, the springs acting with increasing force or effect on the beams as the latter are raised. The object is simple. When in use, the beams of the cultivators are intended to be moved by an operator as the machine passes over the ground so that those portions of the earth can be acted upon by the shovels, which, in the judgment of the operator, require such action. During this operation, it is not desirable that the lifting-spring should be exerting any, or any appreciable, upward strain, because if they did the operator would have to continually combat this strain in the ordinary work of the machine. In passing from place to place, and in passing over obstructions, it is frequently necessary to raise the beams, and as the beams are heavy, this would impose considerable labor upon the operator. The patent describes an arrangement whereby the drag-bars or vertically-swinging beams which carry the plow-points, can, by springs, be raised when the operator starts them, in the upward direc-

tion with an increasing force, so that the beams will be elevated by a strain, increased as the beam moves up, while at the same time, with the beams in their operative position, the strain is either greatly lessened or is entirely removed. The patent shows and describes springs adapted to give this mode of operation, though the inventor says that other forms may be used when they are so combined with the machine that they exert a greater or stronger lifting force or effect upon the beam when the latter is above the operative position, than when it is in use.

The first claim refers to a combination of certain parts in a machine having the features of a cultivator, and by this I understand the claim to mean a machine provided with suitable wheels and an arched frame and vertically-swinging drag-bars or beams, combined with lifting-springs which act with an increasing force or effect on the beams as the latter rises, if but one beam is employed, and *vice versa*.

The second claim is also for a combination in the same machine, and it includes the necessary structure to constitute a wheeled cultivator, embracing the vertically-moving beam and a lifting spring, so combined with the other parts, that as the beam is raised from its operative position, an increasing upward strain is communicated to the beam as the latter rises.

The third claim is also for a combination of parts in, as I understand it, a machine having the requirements of the machine in the patent, embracing a wheeled frame, a vertically-moving beam or drag-bar attached thereto, combined with a lifting-spring as described in the patent, which is adapted to exert upon the beam a greater strain or effect when the latter is elevated, than when it is depressed.

The fourth claim involves the vertically-moving beam, and a lifting-spring and a shifting or changing bearing, whereby the lifting action or effect of the spring upon the beam is increased as the beam is elevated.

In the Wright patent, the springs are so combined with the arched axle and the beams, that when the beams are elevated the springs increase their lifting effect upon the beams, as the beams go up, the conditions becoming more favorable for the elevating action of the springs in their effect upon the beam. The springs thus, as I may say, obtaining a more and more advantageous action upon the beam, so that, from a condition of no elevating capacity, or at least very little, they acquire as the beams go up very great elevating capacity.

I will now turn to the Dalton patent, which I am asked to compare with the Wright invention. The Dalton patent shows and describes a gang-plow consisting of a frame, to the bottom of which, I presume,

the plow-shares are to be attached by suitable attaching means. This frame is provided with a tongue, and is carried by an axle which is cranked adjacent to the wheels so that the crank portion of the axle may be some five or six inches above the axial line of the hubs. To this portion of the axle the frame is attached. A coiled spring is attached at one end to the axle around which it is coiled, and the other end of it is attached to the frame of the machine. The patent states as follows: "The spring D should be so arranged that when released, its elasticity may revolve the axle C in such a direction as to raise the frame A, and with it the plows, more or less, according to the space through which the said axle is allowed to revolve."

The axle is controlled in its movements by a lever E, which is attached to it, and which is to be held in the desired position by stops or catches which are not shown. Now, the first distinction between the Dalton device and the Wright devices is this: The Dalton structure is a gang-plow, and is not a cultivator. This difference is not a difference merely in name, but the two things that the names describe are radically different things. A gang-plow is adapted for one class of work having certain requirements, and a cultivator is adapted for an entirely different class of work, having other and different requirements. The gang-plow is not required to pass over rows of comparatively high-standing grain, and consequently in its structure, the high-arched axle essential to the cultivator is not found. In the plow of Dalton, there is, it is true, a slight arch to the axle, but when the machine is in use, the arched portion is to be turned more or less downward toward the earth and occupying a position generally, I should imagine, not above the axial line of the hubs, while in the cultivator the arch is not movable, and is always in the vertical position when the machine is in use. Thus, in the case of Dalton, the small arch or crank-axle is to be by the lever turned over more or less, as it is desired, that the plows attached to the frame should cut a deep or shallow furrow. For a deep furrow, the axle is turned further toward the ground; for a shallow furrow, it is retained in a more elevated position; but this difference in elevation is merely a matter of inches, the intent of the machine being to utilize this cranking of the axle for a totally dissimilar purpose from the arching of the axle in the cultivator. So I think it is evident, that in the Dalton plow one of the essential requisites of the cultivator, to-wit, the arched axle for passing over standing crops, is omitted.

The next feature of dissimilarity is found in the fact that the Dalton structure is not provided with the drag-bar or shovel-beams capable of upward movement independent of the axle, and capable of being directed in operation laterally independently of the rest of the machine. Such devices are totally lacking in Dalton, and neither they or their equivalents appear in any form. Dalton's plows are not adapted to operate as cultivators, and neither are Wright's cultivators adapted to act as plows, as these terms are ordinarily used.

Both have implements to act upon the earth, but the action is different, and the implements are totally dissimilar. A plow is adapted for cutting through and turning over soil to a considerable depth, and is an implement that requires great strength and firmness to enable it to be forced through heavy and unyielding soils, whereas the shovels of a cultivator are adapted for operation upon soil that has already been broken and in which crops are growing, and these shovels require to be controlled and manipulated independently from the arched axle. Therefore, it is clear that Dalton has not got the second essential for a cultivator like Wright's, to-wit, a drag-bar or shovel-beam, capable of being utilized for doing the work that the beam and shovels of the Wright structure are adapted for, but that on the other hand, the Dalton structure has plow-shares attached to the wheeled frame adapted for operating upon the soil, to prepare the same for crops, which is a totally dissimilar operation to that of the shovels of a cultivator.

Now, Dalton has shown a spiral spring, or a coiled spring, which he says is to raise the frame by turning the axle when it desired to lift the frame upward. As the frame is raised upward the effort of raising it becomes less by reason of the fact that as it rises its weight is carried more and more over the axial line of the wheel hubs, and consequently in constructing a spring for this purpose, the spring would naturally be so made as to accomplish the result with the least labor, and to make a spring with which this could be accomplished with the least labor would involve the making of the spring, which, when the parts are in the position shown in the drawing, would be exerting practically no effort, but which, when the plows were lowered by turning the axle, would exert a rapidly increasing force. Such a spring would be the normal one to apply to the Dalton structure, and such a spring would fulfill the requirements of the Dalton patent, exerting its greatest strain when the plows were in the ground, and exerting a constantly decreasing energy as the plows were raised. If the machine now be examined in the light of the present controversy, it will be found that probably such a spring would act upon the frame with a decreasing energy, and as the weight to be overcome by the spring decreased as the frame rose, they would probably decrease together.

It must be born in mind, in considering the Dalton structure, that the spring is not adapted or arranged to act with any increasing effect upon the frame as it is elevated, and that in the case of the application to Dalton of a very strong spring which would uncoil with a practically constant energy, that the operation of such a spring would merely be to raise the frame at the upper part of its upward movement with greater ease, by reason of the fact that the frame was being carried over the axial line of support. No other advantage would be had. Now, turning to the Wright patent, the arc through which the cultivator beams are moved is comparatively a small one, and in machines of this class the difference in the weight of the beams, by rea-

son of their position, is very slight, and a spring which is expanding or losing power in the act of raising them must, if it is to raise them with an increasing force or effect, do so as it loses power, by gaining an advantgae in the direction in which it acts, or by increasing the leverage that it brings to bear in raising the beam. In this way, though the spring is diminishing in power, it can be made to operate on the practically constant weight of the beam with an increasing force or effect as the beam is moved upward. It is clear, therefore, that no such spring so applied is found in the Dalton machine, as in that machine there is no practically constant weight raised, but one is raised, which, by its position, continually goes up with less effect, while in the case of the cultivator, the beam requires practically the same effort throughout its movement upward to raise it. To raise the beam in the cultivator with increasing force or effect by a spring which is constantly losing energy as the beam rises, it is essential that the spring should so act during its expansion as to more advantageously apply its power to the beam being raised. This advantage is attained in the Wright structure through the increased leverage with which the spring applies its force, and to accomplish this, a shifting or changing bearing is provided for one end of the spring, and thus as the practically constant weight of the beam is lifted, the spring can exert an increased effort in raising it, by gaining an advantage in the leverage with which it works, and by the use of a shifting bearing for one end of the spring. The first requisite of the Wright spring is, that it should exert but little, if any, lifting energy upon the beam when the beam is down, or in the operative position. Comparing this with Dalton, we find that the Dalton spring exerts its maximum energy when the plows are in their lower or working position. In the Wright structure, the spring, by reason of the gain of leverage and the shifting bearing, exerts an increased lifting effect as the practically constant weight of the beam is raised and the spring weakened. In Dalton, as the spring weakens, it exerts no increased lifting effect upon a practically constant weight, for the weight in Dalton is constantly being so moved that its elevation becomes a matter of less and less labor for the spring. This is necessarily true of a machine organized as is the Dalton machine, where the weight raised is brought over the point of suspension, and it is necessarily untrue in a machine like a cultivator, where the weight is never brought, even approximately, over the point of support, but where the weight lifted is practically constant. As I have before said, with a spring which I think a mechanic would apply to Dalton, the expiring energy of the spring would be suited to the lightening of the load to lift it. It must be borne in mind that Dalton describes his spring as adapted to raise the gang-plows while running, so that they may cut a light furrow, or be entirely lifted from the ground. Now, a series of plow-points jammed with their noses in the solid earth, requires to lift them while running a maximum of spring energy when the plows are in their lowest position. Compare this with the cultivator, where there is to be no, or at most very little, tendency to lift the shovels

when they are at work, and when, according to Dalton, his machine requires the greatest energy. Thus, the greatest energy of the Dalton spring is to be had when the plows are in the ground, and at a time when Wright is to apply practically no energy to raise his beams. I do not think that the Dalton patent describes a machine which in any sense contains par s adapted for increasing the force or effect of the lifting power of a spring upon any device that is in any sense the equivalent of the drag-bar of a cultivator. In fact, Dalton lacks those devices that are essential to enable an expanding spring to operate in the way that Wright's spring operates on his drag-bar. Now, therefore, I do not think that the Dalton device shows the combinations of any one of the claims here in controversy. His device is not a wheeled cultivator, which is made essential in the first and second claim by terms, it has not a vertically-swinging drag-bar or beam, which is an essential of all the claims; it has not got the shifting or changing bearing which is specifically referred to in the fourth claim, and it has not a spring which acts with increasing force or effect, or an increasing upward strain, or with a greater strain, or with a greater lifting effect upon any device which is in any sense a drag-bar or beam, and these are essentials of all the claims. It may be that under certain circumstances it might be easier to raise Dalton's plows throughout the last part of their upward movement than throughout the first part of their movement, but this has nothing to do with the matter, for in Dalton, such case comes from the fact that the load is being raised over the point of support, and not from the fact that the expanding spring is operating with a more advantageous leverage and with a bearing that shifts to admit of this advantage being had. For these reasons I do not think that the Dalton structure shows the inventions set forth in the first four claims of the Wright patent.

Before leaving the subject, I should state that in the use of plows, as compared with cultivators, the plows are raised but seldom from the ground, while the cultivators are raised with great frequency. The cultivator shovels get clogged with roots and materials in the ground, and have to be constantly freed, and therefore the advantage in raising them easily is much more necessary than in the case of a plow, and likewise I should add in referring to the Dalton structure that the action described in the Wright patent of the spring, in giving an increasing effect, is not desired, and is actually disadvantageous in the Dalton structure, from the fact, that if the spring was adapted to give an increasing effect as the plows were raised, then unnecessary labor would be thrown upon the operator in overcoming the spring to get the plows into the ground. However, the two machines operate on diametrically opposite principles, and it seems to me that the differences I have pointed out clearly distinguish one from the other.

Q. 6. Have you familiarized yourself with the Gorham patent, No. 154,666, of September 1, 1874, "Defendant's Exhibit, Gorham Patent," and if so, please make the same comparison as between it and the Wright invention of the first four claims of the patent sued on, and give your reasons as before?

A. I have familiarized myself with the Gorham patent which describes a cultivator having two drag-bars with shovels on them. The cultivator beams are pivoted at their front end, and about one-third of the distance back from the pivot there is bolted a rod called the suspension rod and marked with the letter *d*. This rod projects upward and forward from the beam, the upper end passing through a hole in a bracket or ear fastened to the yoke-beam of the cultivator. A spiral spring is upon that portion of the rod which projects through the ear and is held in position by a nut on the end of the rod. Through this rod, and by the spring, the cultivator drag-beams are suspended, and by the nut their height can be regulated. When the beams are raised to hook them up, whatever of compression there was in the spring will be utilized in helping to raise the drag-bar, but they are manifestly exerting their greatest lifting action when the cultivators are in the ground, and the springs can exert no increasing strain or effect as the drag-bars are lifted upward, acting as would any spiral spring placed over the drag-bars with a constantly decreasing force or effect. It seems to me that it is unnecessary to further dwell upon this machine, as it is manifest on the face of it that it does not contain the essential feature of all of the claims of the Wright patent, in that, there is no spring so arranged as practically to have no effect, or very little effect, when the drag-bars are down, and then adapted to exert an increasing effect, upward strain, or lifting tendency, when the drag-bars are elevated. On the other hand, in the Gorham patent, the springs are doing their maximum work when the shovels are down, and the springs are constantly losing force or effect and giving less strain and exerting less upward tendency as the drag-bars are raised.

Q. 7. Are you familiar with the William P. Brown patent, No. 190,816, of May 15, 1877, "Defendant's Exhibit, Brown 1877 Patent?" If so, please state if you find therein the subject-matter of any, or all, of the first four claims of the Wright patent sued on; also, whether or not the changes necessary for giving to the spring of the Brown 1877 patent the increasing force or effect of the Wright claims, would, in your opinion, involve patentable invention; and as illustrative of the kind of changes I refer to, I call your attention to what Mr. Bates, defendant's expert, says of the Brown 1877 patent, in his answer to Q. 7.

A. I am familiar with the Brown patent, No. 190,816, having been called upon to examine the same with great care in a previous litigation. The Brown patent does not show the invention of any one

of the claims of the Wright patent in suit. It is needless to give my reasons for this, as Mr. Bates does not, in his deposition, state that it does. I have read what Mr. Bates has stated as to the proposed changes in the Brown machine, and by so reconstructing the Brown machine, I dare say, a machine having the essentials of the Wright machine could be produced. To so reconstruct the machine, however, would involve a departure of such a radical nature from the mechanism of the Brown machine, that it would clearly amount to an invention to so reconstruct Brown. Brown uses an arm and a spring to sustain part of the weight of the beams when in operation, and as the beams are raised, the spring, as in the patent of Gorham, constantly loses tension, but the idea on which the Brown patent rested, or at least one of them, was to have this spring exerting its power and force at its maximum when the shovels were in the ground. Now, to take this machine and move the arm, as Mr. Bates suggests, so that there would be no, or appreciably, no lifting effect when the shovels were in the ground, but the maximum lifting effect would be had after the shovels were raised and as the beam went up, would be such a change as would require alteration in the parts themselves, and amount to a radical departure from what Brown showed, involving new uses and new capacities, and would undoubtedly amount to an invention on the part of any person who should make the change in the machine. The device of Brown, as shown in the patent, is not adapted for the changes, as the grooves in the pipe-box in Figure 4 show. I can only say, in conclusion, that to make the alteration suggested by Mr. Bates, would amount practically to building a new machine, having new capacities and new methods of operation not shown by Brown, and which would be so radical in their nature, and would involve such modifications and alterations of parts as would constitute a substantive invention on the part of the person who attempted it. In this connection, it may be noted, that if the arm M, of the Brown patent, was thrown to the left from the position as shown in Figure 2, to the necessary extent, that such change would involve the reconstruction of the link now used for connecting the spring and the arm, which, in view of the change, would have to be greatly lengthened, unless some change was made in the spring. The link would, at any rate, have to be altered. Referring to Figure 4, of the patent, it will be seen that the piece G fits on to the pipe-box E, and that both parts are grooved so that they may fit and hold tightly when secured by the loop *s*. It will be noted that there are a few grooves in the pipe-box beyond the lower grooved edge of the stirrup, thus indicating a capacity for adjusting the arm M forward, but to a decree that would not be sufficient, nor anything like sufficient, to give to the parts the operation described by Wright. This is conclusive, I think, that so far as the Brown patent goes, no thought of such an adjustment was ever entertained by the inventor who produced the Brown machine. It is very easy to suggest, after an invention has been made, how some old structure could be modified, and changed, and altered, to turn it into

the new thing, but those resemblances are usually seen after the new invention has had life and being, and they are not at all evident before.

Q. 8. Have you examined the Ward patent, No. 200,955, granted March 5, 1878, "Defendant's Fxhibit, Ward Patent," and if so, state what relationship, if any, this patent has to the Wright invention in question, and give your reasons as before?

A. I have carefully read the Ward patent, and I think that I understand the same, though I am in doubt about certain of the details of construction. However, the patent shows a cultivator with two drag-bars attached to a wheeled frame. Attached to the drag-bars by a long lever extending forward from each drag-bar is a weight. The lever that carries the weight, besides projecting forward in the machine, projects upward, and the weight is thus held almost at the top of the machine. The weight seems to have two functions; one is when a shovel strikes a stone or hard spot, and its movement is so arrested that it is liable to break, the weight will be moved and the endangered shovel will be allowed to hinge backward, and it will thus pass the obstruction. An intricate series of catches are shown for accomplishing this purpose, and just how they work I cannot with certainty determine. The description is meagre, and the drawings are not clear, and though I think I could make the device, I don't think it would accord with the specifications and drawings exactly. The patent says, that by raising the handles of the drag-beams, the weights N will descend in front of the axle, and will thus balance the plows away from the ground. I have no doubt that if the weights are heavy enough they could have this action, and as they fall forward they will balance the plow-beams, or, properly speaking, the drag-bars, and cause them to be lifted from the ground.

This part of the machine is perfectly comprehensible, but I fail to see that it has any bearing or relation to the Wright invention, in which the lifting of the drag-bars is accomplished by the instrumentality of springs, and which patent is limited, as I understand it, by the terms of the claims, to a spring for doing the work of lifting. As a matter of fact, the practical requirements of such machines limit them to the use of springs in contradistinction to weights. There are many situations, and this is one of them, where a spring and a weight are not equivalents. Any one can see what the effect would be in a cultivator of two 30 or 40-pound weights held at the top of long levers and high up in the machine. The result would be a totally useless and impracticable machine, which would be soon torn to pieces by reason of the moving weights sustained in the position best calculated to rack and tear the machine. Their use would be wholly impracticable.

Coming back to the equivalency of a weight and a spring, I think many examples can be given besides a cultivator, in which they are not equivalents: Take, for example, a watch and a pendulum clock —both keep time, both, so long as they are kept perfectly still, might be used interchangeably, but no one can assert that the watch, when on board of a ship or on a railroad train, can have its place taken by the pendulum clock. Many other examples occur—for example, a spring-bed, when made with springs, is a highly serviceable article, but I think if weights were substituted for the springs, that but few people would sleep on such a bed. So, for example, in an eye-glass, if the function of the spring was carried out by a weight hanging down on each side of a man's nose, I am disposed to think that spectacles would have a larger sale than eye-glasses Examples can be multiplied without end, and it seems needless to burden the record with further illustrations.

Adjourned, to meet at same place on Wednesday, April 18, 1888, at 10 o'clock, A. M.

R. H. WHITTLESEY,

Special Examiner.

NEW YORK, April 18, 1888.

Met pursuant to adjournment. Counsel present as at last meeting.

Examination of witness Henry L. Brevoort resumed.

Witness, continuing his answer, says:

In the Ward machine, the tongue R is very high, being held by a correspondingly high arch, and the tongue is intended, as I understand it, to pass forward over the horses, and not between them. Now, the weights N, are held up by their levers close to the tongue. I call attention to this fact as showing how high in the Ward machine the weights are above the ground, and it is manifest that the higher up is the position of the weights, the more impracticable does the machine become, because the weight sustained in such an elevated position, would rack and tear the machine, and in practice would soon destroy it.

Q. 9. Please compare the Wright 1879 patent, "Defendant's Exhibit, Wright 1879 Patent," with the Wright patent in suit. State whether the inventions of the two patents are the same, or different; and if different, whether the difference is substantial in its character, and is set forth in the specifications of said patents with such clearness and precision as to be readily apprehended?

A I have compared the two patents The mechanism shown in the drawings is the same mechanism, but the inventions set forth in the patents are seperate and distinct inventions, and are specifically so stated to be in the specifications and claims. I may say, generally speaking, that the patent of earlier date describes a cultivator in which is claimed mechanism which has the effect when brought into play, of both raising the beam upward, and when desired, of pressing the beam downward, while the patent of later date refers to mechanism in which a spring, as it loses tension, will raise the beam with increasing effect as the beam goes up. I will quote from the patent certain statements which clearly differentiate the inventions. In the 1879 patent, I find the following: "I do not claim in the present patent the broad idea of a lifting-spring which acts with increasing force as the beam rises, as I have made the same the subject of a seperate application, bearing date prior hereto." I now turn to the patent of later date, and I quote the following: "No claim is made in the present case to this duplex action of the springs, nor to the

peculiar form or arrangement of the springs, otherwise than as regards the feature of exerting an increasing or a maximum strain on the beams as the latter rises, the peculiar construction of the springs being already covered in a patent hitherto, granted to me." Now, it will be observed that the patent of June 7, 1881, which is the patent issued last, and is the one in suit, was applied for in May, 1879, while the patent issued first, was applied for in November, 1879.

Q. 10. If I correctly understand the views of Mr. Bates, defendant's expert, as contained in his answer to Q. 18, he seems to be of opinion that the first four claims of the Wright patent in suit, are also found among the claims of the Wright 1879 patent. Please refer to what Mr. Bates says on that point and state what the facts are in that regard?

A. I have read the answer which Mr. Bates has given to Q. 18, and I think I understand the statement that he makes. He says that the inventions of claims 1, 2, and 3, of the patent in suit, are found in claims 4, 6, and 7, of the 1879 patent. Now, claim 4, of the 1879 patent, refers to an automatic spring which will urge the beam both upward and downward; in claim 6, of the 1879 patent, an invention is referred to in which the strain is changed from one direction to the other, or ceases in one direction and is manifested in another direction. In the 7th claim, there is described a spring which, as I understand it, substantially is to have two portions—one to urge the beam upward, and the other adapted to urge it in any direction except upward. Now, I fail to find that these claims are for the same inventions as are specified in the first three claims of the patent in suit, in each of which a spring is described which is to operate with an increasing force or effect, or with an increasing upward strain, or with a greater strain or effect as the beam rises.

It is necessary to go over claims 5, 8, and 12, which are said to show the 4th claim, for in neither of these claims in the 1879 patent is there involved the invention specified in the 4th claim of the patent in suit, in which the spring is to exert an increased effect upon the beam as the latter rises.

Q. 11. In his answer to Q. 9, Mr. Bates, defendant's expert, gives his understanding of the meaning of the phrase, "may be applied to various other machines containing substantially the same requirements." Please state if you agree with Mr. Bates in the views there expressed, and if not, point out his error?

A. I have read the answer that Mr. Bates gives to the 9th question, and it seems to me that he uses the term requirements in one sense, and that the patent uses it in another sense. In the patent, the term requirements is used, as I understand it, in the sense of the

requisites necessary for the organization, and refers to the paragraph beginning on line 7, of the specification, first page, that is, confining the invention to machines in which there are vertically-swinging bars projecting from, and pivoted to, a wheeled frame, which bars have, in the operation of the machine, to be frequently raised or depressed in the ordinary use of the mechanism. This is the class of machines to which the invention is to be applied, and which has substantially the same organization as the machine of the patent, and with which the invention is adapted for use.

Q. 12. I also notice that Mr. Bates, in his deposition, in describing the structure of the Wright machine, speaks of "a spring with a long-curved arm attached * * * in such a way as to have the action of an incline plane, and thereby exert a lifting effect on the beams." To what extent, if at all, is this incline theory of Mr. Bates mechanically correct?

A. I don't understand that the theory is correct at all. There is no action in the Wright machine due to the introduction of an incline plane which is pushed in under a roller. The spring shown lifts the beam and goes up as the beam goes up, and it is in no sense an incline plane, but is a spring-action which elevates the beam, and I fail to see any reason why Mr. Bates should have called it, mechanically speaking, an inclined plane.

Q. 13. I call your attention to Mr. Bates' theory of leverage as embodied in the Bradley (defendant's machine), the same being contained in his answer to Q. 16. Please read what Mr. Bates says on this subject, and state whether or not Mr. Bates' views as therein contained, embody an adequate view of the leverage action, which, in the Bradley machine, gives the result sought for?

A. I have read the portion of Mr. Bates' deposition to which I am referred, and, if I understand what Mr. Bates does mean, then I do not agree with him. The situation in the case of the defendant's machine is as follows: When the drag-bar is horizontal, the lever to which the spring is connected is also about horizontal; when the beam is raised, it rises through a small arc, while the lever on the frame of the machine moves through a much larger arc. The rod that connects the upper lever and the beam pulls on the beam as the beam rises to the disadvantage of the spring, but the spring, on the other hand, pulls with a constantly increasing advantage upon the pivoted lever, and thus an increasing upward effect is obtained upon the beam by the change of relation between the spring and the lever to which it is connected, and the point of attachment of the rod connection with the upper lever.

Q. 14. Near the conclusion of his answer, Mr. Bates says: "The Bradley machine has no shifting bearing or shifting fulcrum of any kind whatever." Do you understand that statement to be correct, and if not, point out where, in the Bradley machine, the shifting bearing referred to is to be found?

A. In the Bradley machine, there is a shifting bearing at the end of the upper lever, where it connects with the spring, consequently, I think Mr. Bates is wrong in his statement when he says that the machine has no shifting bearing, for this shifting bearing shifts in relation to the fulcrum of the lever, as the lever rises, and enables the spring to exert an increasing effect through the lever on the beam. The upper bearing, where the rod that connects with the drag-bar is attached, is also a shifting bearing, but the point of connection between the spring and the lever is the shifting bearing referred to, and is the equivalent of the one referred to by Wright.

Q. 15. This shifting bearing of the Bradley machine, is, as I understand it, an articulated joint. I call your attention to what the Wright patent says about a radius bar. Would Wright's radius-bar connection be an articulated joint, and if so, would or not, the two things be substantially the same for the purposes here in question?

A. The joint in defendant's structure is an articulated joint, and Wright, in using his radius-bar, would necessarily make the same means of connection, and both joints would be articulated, and would be the same in this connection.

Cross-Examination by L. L. Bond, Counsel for Defendants.

X Q. 16. What parts do you include in the statement of your last answer when you say that Wright, in using his radius-bar, would use the same means of connection, etc.?

A. I include an articulated connection between the spring and a device with which it is connected, in this connection illustrating the fact that Wright contemplated an articulation at such point.

X Q. 17. If the Wright roller was made in proportion to the size shown in the drawing, would it necessarily make a complete rotation, and if not a complete rotation, would not its back and forth movement constitute substantially an articulated joint?

A. I should think it would make a complete rotation. It would not be precisely an articulated joint, though it would be a substitute for it.

X Q. 18. Have you ever practically used plows or cultivators in the field?

A. No.

X Q. 19. In several of your answers, when referring to complainant's patent, you speak of the Wright inventions, do you find more than one invention shown and described in that patent?

A. There is described, one invention, but the invention is capable of different expressions, and in this sense, I speak of inventions in speaking of the claims.

X Q. 20. Do you understand that any part of the Wright invention consists in arranging the machine to pass over rows of standing corn?

A. This feature of the device is shown in the drawings, and described in the patent, and those claims that specifically refer to a cultivator by name, I should imagine might be understood as including an arched axle, so that the corn can be passed over.

X Q. 21. You refer, do you not, to the description commencing at line 95, page 1, of the specification, where it is described as a well-known form of the ordinary double-shovel wheeled cultivator?

A. Yes.

X Q. 22. The specification mentions in several places the beam being above operative position, and you have used the same expression. What does it mean?

A. It means with the beams elevated so that the shovels are clear of the ground, as shown in Figs. 4 and 5, for example.

X Q. 23. When the operator desires to lift either beam when the machine is running, does he not have to lift the beam with the accumulated earth upon the shovels above such operative position before the Wright spring takes effect?

A. He has to lift the shovels and the added weight of the adherent dirt. In lifting the shovels, they come out of the ground in the arc of a circle and in the direction that they point.

X Q. 24. While that is correct when the machine is standing still, is it correct when the machine is in motion?

A. When the machine is in motion there would be more weight to be raised.

X Q. 25. If the spring exerted any down pressure, or held against the beam as a stop, this down pressure, or the force necessary to pass the stop, would have to be added to the original weight and the strain caused by the earth, to get at the sum total of the operator's work, would it not?

A. If the spring exerted down pressure, this would have to be overcome as well as the other weight.

X Q. 26. If you desired to run a shovel-plow or a mold-board plow out of the ground by the draft of the team, how would you do it in either case?

A. I suppose in ordinary plowing the plow would be run up gradually out of the ground, though I have often seen a plow pulled back, and got out that way.

X Q. 27. Do not cultivators which run between the rows require as much lifting over obstructions, and getting around at ends of rows, as straddle-row cultivators do?

A. I never saw one. I see no reason to suppose that one kind, or the other kind, would require a different amount of elevating.

X Q. 28. Do not gang or sulky-plows have the same requirements for getting around the ends of furrows that cultivators do for getting around the ends of rows, and do they not require the same lifting of the plows or shovels above the ground for transportation purposes?

A. Probably in the cases named, but a cultivator must be lifted with great frequency while moving along and doing its ordinary work—much more frequently, I should think, than a plow.

X Q. 29. That depends, does it not, as to whether the field obstructions are stones or roots, or whether they are corn stubble?

A. It would depend on the obstructions in any case.

X Q. 30. The plow would have to be lifted over stones or roots, as well as a cultivator, would it not?

A. If the stone presented an obstruction that could not be passed, both would have to be lifted.

X Q. 31. Is not the shovel-plow frequently used for stirring the soil in preparation for crops, as well as for cultivating the soil after planting, or, in other words, is it not the old well-known Greek plow?

A. I suppose it could be used. Whether it is so used to any extent I don't know. I do not understand that cultivators, such as we are discussing, are used for breaking ground in the way that an ordinary plow is.

X Q 32 Are not plows frequently used in the cultivation of growing plants, particularly where the result known as hilling is desired?

A. I have seen plows being run between rows of plants; how common the practice is I don't know.

X Q. 33. What, or about what, is the average weight of an iron cultivator beam used in a straddle-row cultivator?

A. I never weighed one, but I should judge that the beam and its attached shovels with the handle, would weigh from forty to sixty pounds.

X Q 34. As you understand the Wright patent, why, under your explanation thereof, are not the first three claims substantially alike?

A. The various claims referred to are, it is true, somewhat alike, so far as the invention expressed is concerned. They differ in their phraseology, however, and the court, in construing them, may, by reason of this difference in phraseology, put a different meaning upon the several claims. For example, in the first claim, a lifting-spring which acts with increasing force or effect on the beam, is referred to; in the second claim, a spring is described, whereby an increasing upward strain is communicated to the beam; and in the third claim, the spring is to exert a greater strain upon the beam. Now, these differences of phraseology may, from the legal aspect of the case, lead to different constructions of the claims. Mechanically speaking, the claims seem to me much alike.

X Q. 35. Are not these distinctions made nugatory by the specification, in the clause commencing with line 60, on page 2, where, on referring to the spring, it says: "Or it may be caused to act with substantially uniform effect, etc.?"

A. I do not see how this language especially effects the question —the portion quoted refers as I understand it, to the fact that as the beams are lifted from their lower position, the spring may exert a very powerful lifting effect, which may be increased as the beam rises, or that, as the beams are lifted, and the increased effect is felt, the ascent of the beam then may be practically uniform.

X Q. 36. Reading the part quoted, and further on in the specification, do you not understand the statement there made to be, in effect, that the spring may be a uniform counter-balance to the weight of the beam?

A. The language may mean that the spring, despite its weakening by expansion, may keep up, by the increased leverage and the shifting bearing, a sustained effect upon the beam, or it might mean that after the handles have been raised, the effect is to be a sustained effect, due to the same causes, but an increased effect in that it is greater than the effect when the shovels are in the ground. Exactly the interpretation to be given to these words is a matter of construction of the patent. I have paid but little attention to the sentence quoted, by reason of the fact that the claims deal alone with an increasing effect or force, that is, the four claims in controversy.

X Q. 37. If that is the meaning of the statement, why does the patentee differentiate it from the other form, by adding, "in which case, however, the machine would require greater attention on the part of the operator to prevent the shovels from riding out of the ground." The difficulty of riding out of the ground would only occur, would it, when the weight of the beam was counterbalanced in its lower or working position?

A. I noticed these words before, and I notice the fifth claim, and these portions of the patent incline me to the view I first stated in a previous answer.

X Q. 38. The devices are the same for all of the claims, are they not?

A. But one set of devices are shown in the drawings, but the patent teaches how to obtain a maintained effect, though the spring is weakening during the upward movement of the beam.

X Q. 39. Are the combinations of the first three claims operative without the shifting bearing of the fourth claim?

A. I think not.

X Q. 40. Where is the leverage in the Wright spring?

A. The beam and the spring, for example, form the lever in Fig. 4, and the beam in Fig. 5. The spring exerts its force against the periphery of the roller, and is held at the other end.

X Q. 41. The roller is the shifting bearing of the Wright organization, is it not, and is it not shifting, in the fact that it advances toward, or recedes from, the fixed end of the spring when the beam is moved?

A. The point of contact between the spring and the roller forms a shifting bearing, as the invention is illustrated, and as the spring moves on the roller it can be made to approach or recede from the end of the spring.

X Q. 42. If the spring-arm of the Wright cultivator was a rigid arm, and the spring or a weight applied to the roller, which in this case would require a sliding attachment up and down on the vertical portion of the arched axle, would not the lifting action then be that of an inclined plane? This supposed structure applies more particularly to Figs. 2 and 4 of the Wright patent.

A. Under the modification, it might be called an inclined plane. I don't know whether the hypothetical machine would work.

X Q. 43. If the 1879 Wright patent had been issued to a stranger instead of to the same patentee, would you not have considered it a complete and perfect anticipation of the patent in suit?

A. This is a question of law. I should not have considered it an anticipation, because the 1881 patent would show an earlier date of filing, and I would have supposed it was the earlier invention, and as it is the broadest patent of the two, I would have been confirmed by this in my view.

X Q. 44. Supposing the two patents stood in the same relation to their respective invention as they do to their dates of issue, would you not then have considered the 1879 patent a complete anticipation of the 1881 patent?

(Objected to by counsel for complainant, as it presents a question of law.)

A. I think I would have thought so if the cross-references or disclaimers in the several patents were out.

X Q. 45. Do you understand that a man could get a patent, say for the double action of the back spring of a jack-knife, which would throw the blade either way when the blade was a quarter open, or between half and full open, that another valid patent could be obtained for throwing the knife back into the handle by the same spring, at any point less than a quarter turn of the blade? Or, in other words, would there, in your opinion, be any difference in actual invention?

(Same objection.)

A. Without admitting that the proposition has any bearing on this case, and that my understanding of the proposition as put is right, I should not think he could.

X Q. 46. Does not the Wright specification, in regard to the requirements of the machine to which the Wright invention may be applied, refer to the requirements of the machine itself, and not to the requirements of the spring?

A. Yes, I think so; the patentee uses the word requirements as implying the essential features of the organization to which his invention is itself applicable.

X Q. 47. In view of the statements of the Wright specification, commencing with line 94, on page 1, where it says that the machine may be of any suitable character, etc., and the statement in line 102, of page 2, that the spring may be any spring, and the statement commencing with line 105, page 2, where it says the invention is designed more particularly for wheeled cultivators, "it is obvious that it may be applied to various other machines containing substantially the same requirements," do you understand that the Wright invention is limited to its use in connection with a walking straddle-row wheeled cultivator?

A. I have had no occasion to consider any other view, as the defendant's machines come within this limitation, but I do not think the patent is so limited. I think that a machine that has a suitable moving frame on wheels, or runners if you like, and which trails behind it one or more drag-bars which had to be lifted at frequent intervals, might be a machine that would be suitable for the application of the Wright invention.

X Q. 48. Is not the Dalton spring a suitable one to be used in connection with the old cultivator shown in the Wright patent?

A. As a spring alone it might be taken from Dalton, and might be so combined with the machine and with probably additional parts, that the Wright invention could be practiced with it, but it is not adapted to be applied to the Wright cultivator as shown by Dalton and as combined with his plow.

X Q. 49. Does not the Dalton patent relate entirely to lifting devices without any special regard to the kind of plows to be used?

A. It relates to lifting devices in a structure called a gang-plow, but the plow-shares are not shown.

X Q. 50. Is not the Dalton machine, in so far as it is shown and described, a known form of cultivator?

A. It is a device for cultivating the earth, but I should not suppose that such devices were used interchangeable with a cultivator of the kind shown by Wright.

X Q. 51. Is it not a common mode of expression to speak of a cultivator of the form shown by Wright, as one having a gang on each side?

A. I have heard shovels referred to as gangs, using it in the sense to express more than one.

X. Q. 52. The crank of the axle in the Dalton machine, is used for lifting mold-board plows, would ordinarily be more than six inches, would it not, in order to go to the lowest depth of plowing, and to be sufficiently raised above the ground for transportation purposes?

A. It might be more than six inches, but as I understand it, it would be a matter of inches anyway. If it wasn't six, it might be eight, it might be nine, or something like that.

X Q. 53. If it was two feet, all the change required would be a longer spring, would it not?

A. Yes, a longer spring would be required.

X Q. 54. So far as the spring itself is concerned, why is not the maximum strain on the spring when the plow is down in Wright the same as in Dalton?

A. In both, when the plow of Dalton is down and the shovels of Wright are down, the spring itself is wound up to its tightest. I assume the absence of the depressing effect.

X Q. 55. In both the Wright and Dalton machines, is not some device essential in order to enable the operator to put the spring into action, and for this purpose is not the handle of the Wright machine the full equivalent of lever E. of the Dalton machine?

A. It does not seem to me to be so; it is true that in both the spring is put under tension by the operator moving the lever of Dalton and the handle of Wright, and in this broad sense they are alike, but the further over you move the Dalton handle, the greater becomes the effort, while when you move the Wright handles downward the effort diminishes.

X Q. 56. Why is not the last part of your answer the same for the Dalton?

A. Because I understand that the Dalton spring must be strong enough to raise the plows, and if the effort ceased by reason of the weight of the frame, then the springs would never raise the plows. Now, the springs in Dalton have got to be strong enough to raise the plows out of the ground.

X Q. 57. Does not the Dalton spring have a stronger lifting effect, or increased lifting effect, as the frame rises?

A. No. As the frame rises it is brought into a position over its point of support, and is thus easier to elevate, but the spring does not increase its upward strain by reason of an increased leverage and a shifting and changing bearing.

X Q. 58. Your understanding of the Wright patent then is, is it not, that the increasing effect and the increasing strain of the spring mean the same thing?

A. As I understand the question, considering the results upon the mechanism, either term can be used.

X Q. 59. Does not the lifting effect of the spring in the Dalton machine increase as the spring loses tension?

A. In the particular combination in which it is found, a spring might be fitted to Dalton which, though it would move the plows upward during the last half of their movement while it was losing tension, would do this only because the load to be moved was being carried over its point of support, and thus the weakening spring would do the work merely by the lightening of the work imposed.

X Q. 60. In the actual combination shown in the Dalton patent, does not the spring operate with increasing lifting effect, owing to the fact that the weight being supported upon a cranked axle, the weight is sustained more and more upon the axial bearings as the cranks approach a vertical position, so at the last the effect of the spring is greater than it was at the starting, notwithstanding its loss of tension?

A. I don't know from the examination of the Dalton patent. The spring may lose tension in the same proportion as the weight ceases to require effort to move it.

X Q. 61. All the swinging that there is in the Dalton frame is vertical, is it not?

A. Yes.

X Q. 62. You spoke of the action of the Dalton spring as being disadvantageous; why do you so consider it?

A. I spoke of it as disadvantageous if arranged in Dalton to give an increasing effect, for there is no necessity in having the spring-power or effect increase as the weight diminishes. The spring might just as well lose effect as the weight ceases to require the application of power to move it.

X Q. 63. Do you understand that there is an actual increase of spring-power in the Wright machine?

A. No. The spring weakens, but by its increased leverage and the moving bearing its effect on the beam is increased.

X Q. 64. Why is not the Dalton crank a lever upon which the spring has the same effect?

A. For this reason: There is nothing between the spring and the load which increases the effect of the spring upon the load, though the spring is weakening. The load merely gets easier to move.

X Q. 65. The result, however, is the same, is it not?

A. No. Because a weakening spring in Wright is made to have an increasing effect on a practically constant weight, whereas, in Dalton, as I understand it, a weakening spring constantly acts on a decreasing weight.

X Q. 66. Does the Dalton frame weigh any more when it is down than when it is up?

A. Not if you put it on the scales, but to the hand of the spring that one can imagine is grasping the frame, the frame to such a hand weighs nothing at the top when directly over the axle, while it weighs its full weight when it is ninety degrees down from its highest position.

HENRY L. BREVOORT.

Counsel for complainant offers in evidence a certified copy from the records of the Patent Office of the decision of the Examiner in the matter of the interference between George W. Brown and Samuel G. Holyoke *v.* George Shaver *v.* W. H. Wilde *v.* C. A. Hague *v.* E. A. Wright *v* W. J. Browne, upon the motion of Brown and Holyoke to dissolve the interference, which is marked by the examiner, "Complainant's Patent Office Exhibit, motion Brown and Holyoke to Dissolve Interference."

Complainant also offers in evidence certified copy from the records of the Patent Office of the decision of the Examiner in the matter of the interference between George Shaver *v.* W. J. Browne *v.* E. A. Wright, on the motion of George Shaver to dissolve the interference, which is marked by the Examiner, "Complainant's Patent Office Exhibit, George Shaver to Dissolve Interference."

Complainant also offers in evidence certified copy from the records of the Patent Office of the decision of the Examiner of Interferences between Shaver *v.* Browne *v.* Wright, which is marked "Complainant's Exhibit, Patent Office Decision of Examiner of Interferences."

Complainant also offers in evidence certified copy from the records of the Patent Office of the decision of the Examiners-in-Chief, in the matter of the interference between William J. Browne *v.* Edgar A. Wright, which is marked by the Examiner "Complainant's Patent Office Exhibit, Decision of the Examiners-in-Chief."

Complainant also offers in evidence certified copy from the records of the Patent Office of the file wrapper and contents in the matter of the letters patent granted Charles A. Hague, which is marked by the Examiner, "Complainant's Exhibit, Hague File Wrapper and Contents."

Complainant offers in evidence a printed Patent Office copy of the patent to Brown and Holyoke, No. 248,993, dated November 1st, 1881, application filed March 2d, 1880, the same being marked "Complainant's Patent Office Exhibit, Brown and Holyoke Patent."

Complainant offers in evidence a printed Patent Office copy of United States Letters Patent No. 61,649, granted January 29, 1867, to A. H. Allison, for Improvement in Cultivators, the same being marked "Complainant's Exhibit, Allison Patent, No. 61,649."

Complainant also offers in evidence printed Patent Office copy United States Letters Patent, reissue No. 9,085, granted February 17, 1880, A. H. Allison, for Improvement in Cultivators, the same being marked "Complainant's Exhibit, Allison Reissue Patent, No. 9,085."

Except as to the Hague file and contents and the Allison original and reissue patent, counsel for the defendant objects to the introduction in evidence of each and all of the foregoing exhibits and to the said exhibits, for the reason that they are not in rebuttal of anything offered by the defendants; that they are between parties strangers to the record and therefore irrelevant, incompetent and immaterial, and for the further reason that they have no relation whatever to any of the issues of this cause.

Adjourned, to meet at same place to-morrow, Thursday, April 19, 1888, at 10 o'clock A. M.

R. H. WHITTLESEY,

Special Examiner.

NEW YORK, N. Y., April 19, 1888.

Met pursuant to adjournment. Counsel present as at meeting of yesterday.

Complainant offers in evidence a blue print copy of the drawing attached to the application of W. J. Browne, filed October 2, 1879, which application was put in interference with the application of Wright for the patent in suit, the same being marked "Complainant's Exhibit Blue Print of W. J. Browne's Drawing."

Counsel for defendant objects to the foregoing exhibit as irrelevant, immaterial and incompetent, and waives any objection to the fact that the exhibit is a blue print.

Counsel for defendant, in accordance with the stipulation on page 28 of complainant's printed record, here gives notice that defendant will use at the hearing of this cause the following cross-questions and answers of the expert, Cyrus Kehr, found in his deposition given in the case of this complainant against the David Bradley Manufacturing Company, to-wit; Nos. 7, 9, 13, 20, 21, 32 to 44, both inclusive, 49 to 54, both inclusive, and 65.

Counsel for complainant rests.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

MOTION BROWN & HOLYOKE TO DISSOLVE INTERFERENCE.

Certificate of Patent Office in due form, that the following is a true copy of the decision of the Examiner, July 15, 1880.

George W. Brown and Samuel G. Holyoke,
v.
Geo. Shaver,
v.
W. H. Wilde,
v.
C. A. Hague,
v.
E. A. Wright,
v.
W. J. Browne.

Interference.
Case "A."
Cultivators.
Motion to Dissolve.

This motion was made on the part of Brown & Holyoke to dissolve the interference, on the ground that neither of the parties in interference (except Brown & Holyoke) shows a lifting spring which acts with increasing force on the beam as it is elevated, and that neither of said applicants (except Brown & Holyoke) has the right to make the claim involving said feature. On the day of the hearing the objections were withdrawn as to all the parties except E. A. Wright and W. J. Browne, and upon these two applications the objections were urged before the Examiner.

The applicant, Wright, by his attorney, presented affidavits in support of the efficient operation of his machine, as claimed, with an exhibit illustrating the working of the machine. Brown & Holyoke, by their attorney, presented working machines to illustrate their position.

Regarding the case of W. J. Browne, the spring, as shown in the drawing and model and working machine, and as described, appears to have little or no effect upon the plow-beam when at or below its working position, but when the beam is raised, the pulley-connection slips upward upon the curved-lever portion H, and by the increase of leverage the spring is enabled to raise the beam and hold it in an elevated position.

In the case of Wright, the beam is acted upon in a less positive manner by the spring than in Brown & Holyoke,s machine, but the question in controversy is: Does the spring act upon the beam with increasing force or with greater effect as the beam rises from one fixed position to another through a certain space? In the two modifications shown in Wright's application, the spring in one case is secured upon the arched axle, and in the other case upon the plow-beam; the two arrangements being regarded as mere modifications, and so described. It will be conceded that if there is any doubt as to the perfect working of the spring in the manner described and claimed in Wright's case, it is in regard to the arrangement shown in Figs. 2 and 4, and on careful examination and trial, it is found that even this arrangement shows the spring acting upon the beam with increased effect or force for several inches as the pulley moves away from the zero, or dead point, which is situated just beyond the summit of the bend on the portion d2 of the spring. It is observed that the bend at d1 (as shown in drawing and model, as described in specification, and as exhibited in the working machine on the one hand, and by the exhibit model on the other), is intended to be, and is, an easy curve, the "dead point" at which the beam would neither be raised nor depressed, being two or three inches from the summit of the bend; and from that point to the summit and several inches further, the beam is urged upward more or less forcibly according as the pulley-bearing is further from, or nearer to, the said "dead point;" then, as the beam rises still further, the spring at last reaches a position in which the beam is in equilibrium, so to speak, and remains suspended—in other words, the spring acts upon the beam for a limited distance in the manner described; and thus fulfils the conditions of the claim fully, and also the mechanical requirements of a working machine of this class.

If the applicant, Wright, were required to demonstrate that his machine would operate as promptly and forcible as Brown & Holyoke's, in order to be entitled to the claim in question, then the claim might be refused, but the spirit of the patent law does not require such a discrimination.

It is found that in one arrangement of Wright's spring, the beam at the "dead point" remains unaffected by the spring, while at a point above the beam is urged upward, and at a point still further up the beam is urged upward with still greater force, and so on. In the other arrangement of the spring the same operation substantially is observed, by the same means, for the same object, and with the same result in kind, though not so positive and conclusive. It appears that Wright is entitled to make the claim in question, and the motion is denied.

OSCAR C. FOX,

Examiner Div. 1.

July 15, 1880.

Complainant's Patent Office Exhibit.

MOTION GEORGE SHAVER TO DISSOLVE INTERFERENCE.

Certificate of Patent Office in due form that the following is a true copy of the decision of the Examiner, August 31, 1880:

George Shaver,
v.
W. J. Brown,
v.
E. A. Wright.

Interference.
Case "A."
Cultivators.

Motion to dissolve Interference.

This motion is made to dissolve the interference, on the ground that no interference exists—that the subject-matter of the interference, to-wit: *A lifting spring which acts with increasing force on the beam or drag-bar as the latter rises, and vice versa*, is anticipated by existing patents; and further, on the ground of irregularity in the declaration of the interference, said patentees (of the unexpired patents) not having been notified.

The patents referred to are:

W. P. Brown, No. 128,701, July 9, 1872.

W. E. Bates, No. 47,693, May 16, 1865.

D. McNabb, No. 45,730, January 3, 1865.

J. Stafford, No. 158,752, January 12, 1875.

(Wheel Cultivators) and—

H. B. Barnard, No. 10,104, February 22, 1870.

J. D. Drake, No. 41,740, February 23, 1864.

C. Edgar, No. 149,296. April 7, 1874, and A. C. Hurst, No. 29,-082, July 10, 1860 (horse rakes.)

The patent of Brown shows springs which hold the beams partially suspended while working, but do not increase in force or effect upon the beams to hold them suspended. The effect upon the beams is merely to sustain the rear ends of the beams while they vibrate vertically and laterally in the ground, but when the beams are lifted, there being no change of bearing as in Wright's and others, but only a chain connection, the spring acts with less and less force as the beam rises.

The patent of Bates appears to have no material bearing upon this issue.

McNabb's patent has no spring as would at first appear. Stafford also appears to have no bearing on the case.

Barnard shows and describes only a "holding-down" spring. Drake shows and describes also a depressing spring only. Edgar shows and describes an automatic apparatus whereby a spring is wound up by the driving wheel, and as a catch is tripped by the operator the spring throws up the teeth to dump the hay. There is no increase of force or effect apparently possible, and none described in this case.

Hurst shows and describes weights applied adjustably to each rake-tooth to hold them down to their work with more or less force, according to the position of the weight upon the tooth, a feature not

uncommon now in cultivators and rakes, but not like the present invention. The patent of Brown, No. 128,701, is the only case cited in which a lifting-spring holds the beam suspended to enable the operator to work the plow up and down more easily; and in this case it appears plain that there will be no increase of force or effect as the beam is lifted, and no decrease of force down to zero as the beam falls, as in the present invention.

As to the question of irregularity, no such question exists after it has been shown that the invention is a patentable one, and not anticipated by the references cited.

The motion is denied.

OSCAR C. FOX,

Examiner, Div. I.

August 31, 1880.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

DECISION OF EXAMINER OF INTERFERENCES.

Certificate of Patent Office in due form, that the following is a true copy of the decision of the Examiner of Interferences, January 3, 1881:

UNITED STATES PATENT OFFICE.

IN RE INTERFERENCE.

Shaver,
v.
Browne,
v.
Wright.
} *Before the Examiner of Interferences.*

Subject matter: Cultivators.

The Primary Examiner has used the following language in defining the issue in this case:

"In a cultivator, the combination of a vertically swinging drag-bar or beam and a lifting spring which acts with increasing force upon the beam as the latter rises, and *vice versa*."

The object of this combination is to obtain an increasing effect upon the beam as it is raised, and at the same time to have the parts so arranged that when the beam is in its normal or working position, little or none of the force of the spring is brought into play.

That the word "force" in the above recited issue is used in a sense synonymous with that of "effect," will be seen by an inspection of the applications of the opposing parties, for in both cases the tension of the spring is greatest when the beam is lowered so that the shovels are in the ground, but at this point the strain is so adjusted that it produces no lifting effect; as the beam is raised, however, the force of the spring is utilized, and although this force necessarily decreases as the tension of the spring diminishes, still this decreasing force is so much more advantageously applied as the upward movement of the beam progresses, that the effect of such force continues to increase until the whole weight of the beam is carried by the spring.

That the invention in controversy is capable of embodiment in many different forms appears from the fact that when this interference was declared no less than six applicants were made parties thereto, each of whom presented devices which varied materially as to the details of construction, and it was to cover the broad ground of a spring which acts with a minimum effect when the beam is down, that the issue herein was made.

Of all the original parties, Browne and Wright alone have filed testimony, and in other respects complied with the office rules, and the contest is accordingly narrowed down to their applications.

Wright testifies to a conception of the invention during the winter of 1876–77, and is partially corroborated as to this date by E. P. Lynch, but it is not until the spring of 1878, that Lynch remembers of receiving a detailed description of the invention. This is not a material point, however, as Browne does not claim to have conceived the invention until February, 1879.

In February, 1878, Wright obtained a cultivator from the Brown Manufacturing Company, of Zanesville, Ohio, and had it sent to the works of the Eagle Manufacturing Company, by which latter company he was employed.

This cultivator was provided with S-shaped lifting springs which were attached to the uprights of the arch, each spring being connected by a link with an *upright* projection from the pipe-box, to which the plow beam was attached.

From this arrangement of parts it will be seen that the effect of the spring was greatest when the beam was in its working position, at the very point where it was desirablo that no lifting force should be exerted. To overcome this defect Wright lowered the spring until its free end was on a level with the pipe box, carried the upright arm or projection backwards until it was parallel with the beam, and connected this arm to the spring by a link adapted to slide in the spring.

By this arrangement of parts the effect of the force of the spring was reversed; i. e., instead of producing the greatest effect when the shovels were in the ground, as in the original machine, there was a minimum effect at that point and an increasing effect as the beam was raised.

There is no doubt, but that by this new arrangement of parts Wright produced a machine which was clearly within the terms of the issue. This conclusion is arrived at not only from a consideration of the testimony of Wright and the witnesses called in his behalf, but also from the result of an actual test of the exhibit machine now in this office. In the course of the test referred to, it was found that a constantly decreasing force on the part of the operator would serve to raise the beam, and it was seen that this result was caused by reason of the fact that an increasing leverage was obtained by the upward movement, and that this increasing leverage more than counteracted the decreasing force of the spring.

It is strenuously urged by counsel for Browne that this original machine was at best an unsuccessful and abandoned experiment, and that it did not contain the subject-matter of the issue.

It has already been stated that the machine referred to contained devices covered by the terms of the issue, and the record shows that the machine was a practically operative one, and also that Wright was anxious to manufacture machines containing this combination, but was prevented from so doing by reason of his employes fearing that the same would infringe patent No. 190,816, granted W. P. Brown, of Zanesville, Ohio. It may, moreover, be said that it has been repeatedly held that abandonment will not be presumed, but must be conclusively proven. As before stated Browne does not claim to have conceived the invention until February, 1879, or almost a year after Wright had embodied his idea in a full-sized working machine,

and as Wright satisfactorily accounted for his delay in placing his device upon the market, he must be adjudged the prior inventor, and such judgment is accordingly rendered.

J. B. CHURCH,
Examiner of Interferences.

EDWARD KENT, JR.,
Acting Assistant.

January 3, 1881.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

DECISION OF EXAMINERS-IN-CHIEF.

Certificate in due form, that the following is a true copy of the decision of the Examiners-in-Chief, March 8, 1881.

No. 6505. U. S. PATENT OFFICE, March 8, 1881.

BEFORE THE EXAMINERS-IN-CHIEF, ON APPEAL.

In the matter of interference between the application of William J. Brown, filed October 2, 1879, and the application of Edgar A. Wright, filed May 23, 1879.

IMPROVEMENTS IN CULTIVATORS.

The matter in interference is declared to be:

"In a cultivator, the combination of a vertically-swinging drag-
"bar or beam, and a lifting-spring, which acts with increasing force
"upon the beam as the latter rises, and *vice versa*."

Originally, there were several other parties, but all have fallen out, except the above.

Wright came to the office in May 23, and Browne in October, 1879.

Wright's preliminary statement gives the winter of 1876 and 1877 as the date of his conception; and he described it in April, 1877, and made sketches, etc.; made full-sized working device in March and April, 1878, and commenced manufacture and sale of same in May, 1879, and had put 1,500 in use.

Browne says that he conceived in February, 1879, and applied and operated his invention on a cultivator in a shop experiment in the same month, and has since used it, and manufactured others.

The claims made by the parties are intended to be quite broad and generic, but whether they would be construed by the courts as really covering more than the thing produced or not, it is yet evident that a claim apparently more limited for the improvement "as shown," would cover all equivalents.

The devices of the parties are quite unlike in details of construction and arrangement of parts; but they are operated on the same principles, and with like functions and results, and the applications have properly been put in interference.

We have carefully considered the evidence of Wright, and find that it fully sustains his preliminary statement. Wright's improved Brown's cultivator of 1878 as clearly shows the invention as do either of the structures now presented. It is then equivalent.

Not being able to use the Brown cultivator without license and payment of royalty, he took time, and got up, and brought out, the structure now presented.

Wright was the original inventor, and acting all the time in perfect good faith, without knowledge of Browne's operations, and using due diligence, and it would be absurd to hold that he ever abandoned the invention, or that the reduction to practice, and practical successful test upon the Brown machine, was an abandoned experiment.

The decision of the Examiner of Interferences is affirmed and priority found in Wright.

R. L. B. Clarke,
H. H. Bates,
Examiners-in-Chief.

CIRCUIT COURT OF THE UNITED STATES, IN AND FOR THE SOUTHERN DISTRICT OF IOWA, EASTERN DIVISION.

The Eagle Manufacturing Co.,
Plaintiff,
v.
W. L. Miller and L. W. Miller, *et al.*,
Defendants.
} *In Equity.*

By consent of the parties the following depositions were taken on behalf of the complainant at the office of Nathaniel French in Davenport, Iowa, before me, Effie E. Moran, a notary public in and for Scott county, Iowa, commencing on the 2d day of September, 1889, at 10 o'clock A. M. Nathaniel French, Esq., appeared for the complainant, and Edward Boyd, Esq., and H. A. Toulmin, Esq., appeared for the defendants.

E. A. WRIGHT, being first duly sworn on behalf of the complainant, testified as follows:

DEPOSITION OF E. A. WRIGHT.

Direct Examination by Nathaniel French, Esq.

Deposition of E. A. Wright.

Q. 1. State your name, age, residence and occupation.

A. Edgar A. Wright; age, 42; Minneapolis, Minnesota; Secretary of Manufacturers' Syndicate.

Q. 2. How long have you been Secretary of the Manufacturers' Syndicate?

A. Since May 1st, 1887.

Q. 3. Prior to May 1st, 1887, what was your occupation and where did you reside?

A. I was manager of the Moline, Milburn & Stoddard Company of Minneapolis, Minnesota. I reside in Minneapolis. I was manager from 1884 to 1887.

Q. 4. Prior to that time what was your occupation?

A. I was an assistant of Mr. Baker, Secretary of the Moline Plow Company. I was at Moline in that capacity from July 25th, 1881, to December, 1882. Prior to that I was in the employ of the Eagle Manufacturing Company of Davenport, Iowa.

Q. 5. In what capacity were you employed by the Eagle Manufacturing Company, and when did you enter their employment.

A. I was in their employ as traveling salesman from 1874 to July, 1881.

Q. 6. Are you the E. A. Wright named as inventor in letters patent Nos. 242,497 and 222,767, being patents in suit herein?

A. I am.

Q. 7 When did you conceive the idea of the spring for a cultivator which should be so combined with the cultivator as to act with an increasing lifting effect as the beam rose?

A. I thought of a spring of that kind in 1876.

Q. 8. What time in 1876?

A. In the fall of 1876.

Q. 9. Did you at that time or subsequently thereto make any drawings illustrating your idea of such a spring?

A. I did.

Q. 10. When were those drawings made and what became of them?

A. They were made at various times during the latter part of 1876; quite a number of them were made on a little tablet that I carried at that time. Sheets of that tablet were torn off and thrown away and destroyed, and I don't know what became of them.

Q. 11. How do you fix the time when you first conceived your idea of the spring, and the time when you first commenced making drawings?

A. I became particularly interested in springs during the month of September, 1876, while on a visit to Zanesville, Ohio, where I went purposely to look that matter up as well as patents on cultivator couplings. While there and at the shops of the Brown Manufacturing Company, I think or the Brown, Manley Company, I saw a new device which Brown, of that firm, was then working at, and immediately on my return home I talked with Mr. Lynch frequently, and made sketches of my ideas of the essential principles which I thought ought to be embodied in the spring. I was at Zanesville September 27, 1876, and got home October 4, 1876, and

remaining during the month of October. These dates I fix by my dairy and expense book kept at that time, and which I now have before me.

Q. 12. You mentioned Brown, of the Brown Manufacturing Company, as working upon the spring, as I understood you. Is the spring which he had at that time shown by any patent which I show you?

A. The devices I saw were similar to what I see represented in his patent No. 190,816. I don't mean to say that they were like they are now in the patent, but were of that style.

Q. 13. In your prior answer you spoke about your ideas as to what a spring should be, please state more fully what those ideas were and whether you communicated them to any one.

A. I think I always contended springs should not lift the beam when it was in an operative position, or in any way prevent it from sucking or going into the ground fully as much as it would naturally go if there were no spring on the cultivator. And all springs that I had any knowledge of up to this time did operate in a manner so as to prevent the shovel from thus sucking and going in and doing the full amount of work they were capable of doing. I communicated my ideas to all of the members of the Eagle Manufacturing Company, but more particularly and oftener to Mr. Lynch, the president of the company.

Q. 14. Was the Brown spring subject to the objections which you mentioned in your last answer?

A. It was.

Q. 15. Did you make any drawings during the year 1876 to illustrate your idea of the proper combination of the spring?

A. I think I did.

Q. 16. Did you during the years 1877 and 1878?

A. Yes.

Q. 17. Do you know what became of the drawings made in 1877 and 1878?

A. There was one drawing made in 1878 that was used as an exhibit in the interference case between Brown, Shaver and Wright. I have not seen it since and don't know where it is. I am not aware that any others were preserved.

Q. 18. Was your testimony taken in the interference case in the patent office which you have already mentioned?

A. It was.

Q. 19. Have you read over your testimony in that case for the purpose of refreshing your recollection?

A. I have.

Q. 20. Did you, during the progress of your testimony in that case, make a drawing to show your first idea of the proper combination of a spring on a cultivator?

A. I made one that was like one that I made for Mr. Lynch and showed him after I returned from my trip to Zanesville, before referred to.

Q. 21. Have you a copy of that drawing?

A. I see one here, it is a copy of one I made during that examination.

Q. 22. How is it marked?

A. It is marked "Exhibit, No. 7, in the Matter of the Interference Shaver *v.* Brown *v.* Wright."

Q. 23. Referring to the other drawing made in 1878 and which you say was offered in evidence in the Interference case, please state how you fix the time when it was made?

A. I know it was made very soon after my return from the trip to Zanesville that I alluded to.

Q. 24. When was this trip to Zanesville made?

A. In September, 1876.

Q. 25. My question referred to the drawing which you testified you made in 1878, and which you testified and offered in evidence in the Interference case; I wish to know when that drawing was made and how you fix the date?

A. That drawing was made in 1878, during the month of March, the latter part of March. I fix the date because I find from my diary that I arrived in Davenport March 23, and I left on April 2, and the drawing was made between those dates. I have a memorandum in my diary that was made at the same time while I was working at that spring, and is under date March 26; the memoranda referred to is a copy of a part of the claims in a patent of Brown's in which the same pipe box and arm is used as were shown, and as I was using in this cultivator and drawing.

Q. 26. How large a drawing was it?

A. It was full size.

Q. 27. Did you, at or about the time of making that drawing, do any work on a cultivator in the way of combining a spring with it so as to embody your idea of a proper spring?

A. I made parts and attached them to a cultivator which we had at that time, just as I had made the drawing.

Q. 28. What cultivator was it, and where did it come from?

A. It was a cultivator made by W. P. Brown and embodying his patent. I don't remember where it came from.

Q. 29. Do you remember whether it came by the cars or whether it was bought in Davenport; and can you fix the date when it was received here?

A. I know that it was received here about February 25, because I have seen the freight bill paid on it Feb. 27, the amount of freight was $1.20; don't remember who it was purchased from. It was shipped here.

Q. 30. Have you other memoranda or means of fixing the time when it was shipped here except the freight bill?

A. I tried to find a record of it this morning and saw on the cash book of the Eagle Manufacturing Company the record of the freight paid on it, that was dated February 27.

Q. 31. Do you know what became of the freight bill?

A. My recollection is that it was used in evidence in the Interference case before referred to My recollection is now that we purchased the cultivator of C. E. Merrifield of Indianapolis, Ind.

Q. 32. What did you do with this cultivator in the way of embodying your idea in the way of a proper combination of the spring on the cultivator?

A. I used all of it that I could, arranged its parts somewhat differently, and added others so as to get the spring to operate as I thought it should, and so that it would not lift up on the beams when it was in an operative position.

Q. 33 Please state more in detail the changes that were made.

A. The cultivator referred to is represented in Brown's patent No. 190,816; on one side I moved the spring lower on the arch so that the lower end of it was down on a level with or a little below the axle on which the coupling revolved. I then turned the pipe box on the axle until the arm end was horizontal or parallel with the beam, and made a link long enough to connect the end of the arm end with the lower part of the spring, and arranged it so that the end would travel up and down on the end of the spring end when the beam was raised or lowered.

Q. 34. When did you make this change?

A. It must have been done between March 23 and April 2, 1878, because I find that I was at home at that time by referring to my diary. That was the first time I was at home after the cultivator was received.

Q. 35. What is your recollection as to the time that you made it independently to your diary; was it the first time you were at home after the cultivator was received, or some other time, or can you state from recollection when it was?

(Edward Boyd, Esq., objected to the question as leading.)

A. I feel sure that it was done the first time I was at home after the cultivator was received.

Q 36. What became of the cultivator which you changed as described?

A. It was sold to John Patterson, Columbus, Ohio.

Q 37. How long after it was received at Davenport, Iowa, was it sold to Patterson?

A. I don't know.

Q. 38. Did you ever see that cultivator again, if so, when?

A. Yes; I got it back here to use in the Interference case.

Q. 39. When it was sold to Patterson, what shape was the cultivator, was it in the shape when originally received or in its altered condition?

A. It was sent to him in the same condition as when purchased from Merrifield.

Q. 40. When it was received here during the Interference case, were any changes made in it?

A. It was then put back into the same shape we had it in 1878.

Q. 41. Do you mean by that into the condition into which you changed it in 1878?

A. Yes.

Q. 42. Were any photographs taken of this cultivator during the Interference case after you had put it into the same condition in which it was after you made your changes in 1878?

A. Yes.

Q. 43. When you changed the Brown cultivator in 1878, was the change made on both beams and springs, or on only one beam and spring?

A. The change was made on one only.

Q. 44. What was done with the photographs which you say was taken of this cultivator during the Interference case?

A They were offered as exhibits in that case.

Q. 45. Have you here copies of those photographs?

A. Yes, sir.

(Counsel for complainant exhibited to the witness before the question was answered certified copies in the patent office of these exhibits Nos. 1, 2, 3, 4, in the Matter of the Interference, Shaver *v.* Brown *v.* Wright.)

Q. 46. You have stated that you made a full sized drawing in 1878, now I wish you to compare that drawing with the copies of the photographs mentioned in your last answer, and in this way describe what the drawings were.

(Objected to as incompetent.)

A. The drawing as far as it went was a part of the machine and spring as shown in the photograph marked No. 1.

Q. 47. Did the drawing show both sides of the cultivator?

A. No. It showed the side only that I had changed.

Q. 48. Which side is that of the photograph marked No. 1.

A. It is the left side of the photograph.

Q. 49. Are there any letters on the photograph which designate the side?

A. It is the side on which appears the letter A.

Q. 50. Please state what was the operation of this cultivator as changed by you in 1878; I refer now to the side which was changed?

A. That spring operates with no lifting force on the beam when it is in an operative position and increases its lifting power as the beam rises, and decreases as the beam goes back into its operative position.

Q. 51. How does the other side which was not changed operate?

A. Exactly the reverse. It lifts most on the beam when it is in the ground?

Q. 52. Was this cultivator which you changed in 1878 so constructed as to be adapted to move the arm on the pipe box back and downward until it became level with the beam?

(Objected to as leading.)

A. It was evidently not intended to be used in that position, because in order to get it in that position the corrugations which were on the pipe box and intended to engage with the other parts of the couplings, were thrown entirely out of engagement and turned so as to be used in this position, and the parts did not fit well together this way, and neither was the arm made in the proper shape to be used in this way.

Q. 53. How about the link connecting the spring with the arm in the cultivator as originally received?

A. It could not be used at all when the parts were in the position I used them, it being entirely too short to connect.

Q. 54. Did you test this cultivator as changed by you to ascertain whether it was operative?

A. We gave it a shop test at that time only. We did operate it when we had it during the Interference trial at a later date.

Q. 55. Operated where, in the field or in the shop?

A. We tried it in a vacant lot near the Rock Island railroad track.

Q. 56. How was the shop test in 1878?

A. We simply handled it on the floor with the wheels blocked up so as to get all parts in the same position relative to one another as they would be in the field. We thought it worked all right.

Q. 57. What was the result of the test in the field during the Interference proceedings?

A. It worked all right.

Q. 58. You have spoken about the link sliding up on the arm of the spring as the beam was raised. Was it necessary to have this sliding upon at the arm of the spring?

A. No; it was not necessary.

Resumed at 2 P. M.

Q. 68. What was the object of this trip which you have spoken of and during which you visited the places mentioned?

A. I went especially to show the sample spring which I carried with me and took orders for it.

Q. 69. Did you exhibit this spring and sell it in the different places you went to?

A. I did.

Q. 70. To whom?

A. Dealers.

Q. 71. When you were in Chicago in June, 1879, where did you exhibit the spring, if at all?

A. I put it on a cultivator in Bradley's warehouse and showed it to Mr. Hague and Mr. Bradley.

Q. 72. Do you mean the warehouse of the Bradley Manufacturing Company?

A. Yes.

Q. 73. For what price did you sell the spring equipments which you took orders for while on your trip?

A. $1.50 per set.

Q. 74. Did the Eagle Manufacturing Company in the years 1880 and 1881 continue making and selling these springs and cultivators equipped with these springs?

A. They did.

Q. 75. Was there any difference in the price of the cultivators with the spring and the cultivators without the spring, and if so, what was the difference?

A. The cultivators with the springs were sold for $1.50 above the price of cultivators without springs.

Q. 76. Did you have anything to do with selling cultivators with the springs of the Eagle Manufacturing Company in 1880 and 1881?

A. Yes, I sold a great many of them. I happen to have a good many of the orders here in my dairy.

Q. 77. About how many sets of springs were sent out in the year 1879, if you know?

A. I have no record; I have to guess at it; I think we must have sent out in the neighborhood of 1,000 springs.

Q. 78. How did the sales in 1880 compare with the sales in 1879?

A. We sold a good many more in 1880 than in 1879.

Q. 79. How was it in 1881?

A. I think it was an increase over 1880.

Q. 80. Did you ever see cultivators with these springs in operation in the field during the years 1879, 1880 and 1881?

A. Yes, I saw a good many.

Q. 81. How did they operate, satisfactorily or otherwise?

A. They gave very good satisfaction.

Q. 82. How were those springs received on the market, if you know, during the years 1879 and 1881 while you were traveling for the Eagle Manufacturing Company?

A. I think that almost every customer that handled the Eagle cultivator handled some of the springs also. I think they were thought well of. When that spring first came out it was thought the best spring in the market.

Q. 83. While you were with the Eagle Manufacturing Company and after you got out your spring cultivator, how did the sales of the spring cultivators made by the Eagle Manufacturing Company compare with the sales of their cultivators without springs? In favor of which was the increase, if any?

A. In my judgment, from the time we got out a spring cultivator up to the present time, the spring cultivators increased in sales every year and cultivators without springs are almost unsalable.

Q. 84. How were they in the years 1879 and 1881; referring now to the cultivators made by the Eagle Manufacturing Company?

A. The sale on spring cultivators increased more rapidly than sales of cultivators without springs.

Q. 85. Did the sales of cultivators without springs during those years increase at all?

A. I think not.

Q. 86. Was the testimony given by you in the Interference case correct to the best of your knowledge and belief, and do you still believe it to be correct?

A. I have not discovered any errors and I think it is correct.

(Counsel for defendants object to the foregoing testimony as incompetent, and as not proper rebuttal, and enter these objections once for all, both as to what has been already testified to and may hereafter be testified to concerning the same matters, by this witness. Without waiving these objections the cross-examination is proceeded with.)

Cross Examination.

X Q. 87. Mr. Wright, we understand that when you received the Brown cultivator, you lowered the frame on the arm and brought one of the springs so as to present its lower end on about the same line with the coupling, and then turned the arm on the pipe box back until nearly horizontal, and then substituted for Brown's short link a longer link to connect this arm to the lower end of the spring. Is this so?

A. That is correct.

X Q. 88. How did you happen to select the Brown machine for this purpose?

A. That machine was purchased and brought here to experiment with because I thought it the most popular machine at that time, that is, I considered it the best spring cultivator on the market, and wanted to compare anything that I might make with it.

X Q. 89. Did the conversation that you had with the inventor, Mr. Brown, at Zanesville, lead you to select his machine for the basis of your operations?

A. No, I don't think that had anything to do with it; my conversation with him was in September and we didn't get this cultivator until the following February.

X Q. 90. Had you thought of using his cultivator for this purpose before those conversations with him?

A. No, I don't think I had. When I got the cultivator here I didn't know what I was going to do with it.

X Q. 91. Did Mr. Brown explain to you that his pipe box could be rolled back until the arm would come near to the beam?

A. No, he did not.

X Q. 92. What did he tell you in reference to adjusting the pipe box arm back and forth, if anything?

A. I don't think he mentioned it.

X Q. 93. After you had arranged the spring of the Brown machine, as above specified, how high did you have to raise the beam before the spring began to act?

A. I should judge we raised the handle three inches

X Q. 94. What position did the pipe box arm then occupy compared to the horizontal?

A. The end of the arm was a little lower than the axle; the end of the arm, the axle, and the end of the loop on the spring were nearly in a straight line as near as I could tell. That was because the beam was raised. If the ends of the beams were raised three

inches I should say it would bring the arm just about on a level with the pipe box; of course it remained in the same position with the beam all the time.

X Q. 95. Then if the arm of the pipe box were in a line with the pipe box when the beam had been raised about three inches, how could the spring act to lift?

A. It would lift because the front end of the link was a little higher. A spring will commence to lift as soon as the three points, that is, the two ends of the link and the center of the axle, are not in a straight line, and they were supposed to be in a straight line when the beam was down.

X Q. 96. Was the spring action sufficient to maintain the beam in an elevated position when it had been lifted to such height as would be necessary to hang the beam on the frame?

A. Yes, it would stay in that position very nicely.

X Q. 97. How much more force would it require in pounds to lift the beam from operative to inoperative position without the spring than with it?

A. I don't remember, but I think that during the Interference trial it was tested by scales and testimony was given, I think.

X Q. 98. Please refer to the question and answer in the Interference record to which you allude.

A. Re-direct Interrogatory 69 of my deposition.

X Q. 99. But that answer refers to a trial in which the spring was on the machine at each point to which the beam was lifted. The notary will please re-read the question.

(The question is repeated.)

A. It requires just the same force for the first few inches until the spring commences to assist, and then every inch the beam moves, it is comparatively less until it is absolutely nothing and the spring supports the beams entirely without any assistance.

(Answer objected to as irresponsive and question repeated.)

A. I consider a beam in an operative position immediately after the shovels become high enough to leave the ground. In my judgment, or, in fact, as shown by experiment I made at that time, it required 10 pounds to hold the beam in about this position when the spring was attached; it is very evident that it would require fully 14½ pounds to hold it there without the spring, showing a saving in this position of about 4½ pounds. In a little higher position, the amount of lifting force required to hold it would be still less than when the beam is in about the position to be hung up on the regular hang-up hooks, it would require no force.

X Q. 100. When the shovels are out of the ground as you have just referred to, would the arm of the pipe box at its free end be about on a level with the pipe box?

A. I think in that case the free end is a little bit higher. I think it was on this particular machine.

X Q 101. Was it high enough to gain 4½ pounds lift by the spring?

A. I think so.

X Q. 102. Can you state without qualification that you know it to be so?

A. No, I only know that it was less.

X Q. 103. As a matter of fact did not your test with the Brown machine in 1878 begin and end as a floor experiment, without going into the field?

A. The test that was made at that particular time did.

X Q. 104. Then so far as the machine was arranged at that time you do not know what it would have done if subjected to field use, when it comes down to actual knowledge which you had at that time?

A. Yes, I do; I know just what it would have done in the field. I know that much about cultivators.

X Q. 105. How do you know?

A. I know from my general knowledge of cultivators, or I knew at that time from my general knowledge of cultivators.

X Q. 106. But this is supposed to have been something new in cultivators, and outside of things generally known. So that I understand that you state that it was practical at that time not because you actually tried it, but because you think so from general principles?

A. No, I knew positively what the cultivator would do in the ground because I had arranged this spring so that it did not effect the working qualities of the beam at all at the time it was in working position; that was the prime object of the invention. And what I had done at that time and for that cultivator was to arrange that spring in such a manner that when the cultivator was in operative position and beam in the ground the spring had no effect on the shovels at all That being the case, I think I can state positively that the cultivator with this spring operates and works just as well and just the same while the shovels were in the ground as it would do when the spring is not on.

X Q. 107. But I understand that the shovels were not on the beams or beam, during these floor tests, were they?

A. They were part of the time; we had them on part of the time and part of the time we had them off.

X Q. 108. Are you positive that the spring materially assisted in raising the beam when the shovels were attached?

A Yes, the assistance was the same whether they were attached or unattached.

X Q. 109. But the weight of the shovels would increase the labor of the spring so that the spring would be of less assistance in readily lifting the beam with the shovels than without them, would it not?

A. No, you are mistaken entirely, the assistance rendered by the spring is exactly the same whether the shovels are attached or unattached. Of course the operator would have more pounds to lift when the shovels were attached than when they were not attached, but the spring would assist them just as much in one case as in the other.

X Q. 110. I know that the spring, if it assisted at all, would assist in both instances, but the question is, did the spring actually lift the beam with the shovels attached after the beam had been raised enough to get the shovels out of the ground, without any further labor on the part of the operator?

A. No, the spring would not lift the shovels and hold them suspended, without other assistance, until the beams had been raised to about the ordinary height for hanging them up. It would assist, however, from the time the shovels left the ground until they were in the regular hang-up position.

X Q. 111. I believe that in your direct testimony you stated that the Brown machine was not adapted to have the pipe box turned back nearly in line with the beams. If this be true, how did you manage to fasten the pipe box so as to hold the arm in this position?

A. There are two reasons why I said that machine was not adapted to be used that way and could not be used satisfactorily in that position. First is, that the corrugations on the box and on the arm were so made to hold them in a position at right angles to the position in which I used it. And in actual practice if the machine were to go into the farmer's hands in that way it could not be held tight enough to give satisfaction; it would soon wear loose. These corrugations show that fact, because they were made to hold it in the other position. Another fact showing it could not be used that way or was not intended to be used that way is, that, in order to use it that way, the brace on this cultivator running from the tongue to the axle had to be removed or bent in order to use the link as I used it. Another thing showing that it could not be used that way is the length of the link Mr. Brown used. It would be a simple impossibility for him to use this cultivator as he put it out with the parts changed into the position that I put them.

X Q. 112. The patent to Brown, 190,816, which shows and describes the Brown machine as it was when you obtained it, states on page 2, column 2, that the stirrup, instead of having a loop constructed in the form of a sleeve and made to embrace the pipe box, can be adjusted and held by a screw bolt shown at *a* in the drawings. From this I understand that the serrations you have alluded to are only one way of holding the beam coupling to the pipe box, and that when the set-screw is used the serrations are not used, and that, therefore, the arm on the pipe box may be held in a position to keep the tension of the springs, as stated on page 2, column 1, near the close of that column. Now then, in view or these facts, could not the Brown pipe box arm have been set back near the beams and held in such position?

A. No.

X Q. 113. Why not?

A. By referring to Brown's drawings you will see that he sets his arm a little forward of a perpendicular position, and it is very evident from the size and construction of the spring he used, that it is not possible to use that arm more than slightly varied from that position. The object Mr. Brown had in view in making the coupling adjustable on the pipe box was to hold the end of the beams at different depths so that the cultivation might be either deep or shallow, according to the tension created by fastening the beam on the sleeve in slightly different positions relative to the arm; and the limit of difference which he expected to make, is shown by the four additional corrugations made in the sleeve, which represent about one-eighth of a circle, showing clearly that there was no intention to move it further. Brown mentioned specially on page 2, column 1, near the lower part of the column, that these ribs or the set-screw, it will be seen, hold the arm end in an upright position.

X Q. 114. But you don't complete the sentence from which you quote on page 2 near the bottom of column 1. Besides mentioning the rib or the set screw that held the arm in an upright position, the patent says, "And by moving the set screw and stirrup or sleeve the tension of the spring may be regulated as desired." I ask you does not this clearly show that Brown, by means of his set screw, contemplated setting the arm back toward the beam?

A. Yes, until it reaches an upright position, it is shown slightly inclined forward and there is no provision for moving it further back than to bring it to an upright position which was fully one-quarter of a circle out of position necessary to use it in order to make the spring work as I have it.

X Q. 115. Then I understand that you took up the Brown arm and adjusted it further back than an upright position. Is this so?

A. In this experiment I did.

X Q. 116. How did you hold it in that position?

A. By set screws.

X Q. 117. Then you did not use serrations other than you found in the Brown machine, did you?

A. No.

X Q. 118. Then the Brown machine, after all, appears to be so constructed as to permit the arm on the pipe box to be carried back nearer to the beam and held by a set screw, the very means which he describes, is not this true?

A. Yes, he could put the arm there, but he could not use it there. He could have turned the arm straight down, but it is impossible to use it in that position. And it is impossible for him to use it in the position I had it in. His machine, as it came from the shop, could not possibly be used as a spring cultivator with the arm turned in the position which I have it, although it was possible to put it in that position.

X Q. 119. And to hold it there?

A. It could be held there in the manner that would answer the purpose temporarily.

X Q. 120. Then as you organized the Brown cultivator for your purposes in 1878, it was merely for temporary purposes, was it?

A. It was.

X Q. 121. Having got the Brown arm adjusted back, you found his link too short, I believe?

A. Yes.

X Q. 122. Then you made a longer link about like his, except as to length, is this so?

A. I had to change the position of the spring also and the shape of it.

X Q 123. You lowered the spring to save making a longer one, did you not?

A I lowered that spring because that was the most convenient way to fix it at that time; if a longer one would have been made it would have been necessary to have made it much heavier and stronger.

X Q. 124. How long did the Brown machine remain arranged according to your plans?

A. I am unable to state exactly, but I think it remained about the shop until after the first of January, 1880, no I mean 1879.

X. Q. 125. And during all that time, we are to understand that you did not take it out and try it, but merely lifted and worked the beams up and down in the shop?

A. The effect of the beams is the same in both cases, that is, the spring has no effect upon them when they are in an operative position, and does commence to affect them as soon as they are raised above an operative position. This patent, No. 259,626, was taken out on a cultivator then shown as a whole, and not the spring as a separate device.

X Q. 139. In the patent assigned to the Moline Plow Company an arm indirectly connected with the beam is forced to one side or the other of a vertical position by a downwardly pressing spiral spring, is it not?

A. Yes.

X Q. 140. The beam is lifted or depressed by these devices according to which side of the center the arm is adjusted, is it not?

A. Yes.

X Q. 141. In the patents sued on, a spring in the form of a rod is connected with the beam and travels under a roller carried by the arch, is it not?

A. Yes.

X Q. 142. In this latter case there is a bend in the spring to present two inclines, one to operate in conjunction with the roller to press the beam down, and the other to raise the beam up, is it not?

A. That may be the case and it may not; it depends upon the curvature given to those two parts of this rod it may operate, as you say, or it may not.

X Q. 143. I mean as showed in the two patents sued on.

A. Referring to patent No. 222,767, there are five cuts representing the spring. In Fig. 1, in my judgment, the cut showing the spring would represent one that would not push down on the beam at all. In Fig. 2 I think the cut represents a spring that might push down slightly.

X Q. 144. Please explain what action may be confidently expected from the spring and its adjuncts shown in your patent, 242,497, sued on?

A. I think exactly the same action might be expected as far as the cuts show; the same as described in the last answer as far as cuts show.

X Q. 145. In your direct examination you referred to a number of cities which you visited between May 11 and June 14, soliciting the sale of the spring as shown in patents sued on. Please give the names of the dealers in the respective cities to whom you sold, and to whom you tried to sell those springs.

A. I have not my book here that have my orders in for that year, 1879.

X Q. 146. Please give as many of the names as you can, stating the respective addresses, without your books.

Adjourned at 5:30 P. M., until 10 A. M., September 3.

10 o'clock, September 3.

A. W. W. Marberg, Atchison, Kan.; Burr & Corn, Cameron; Clements, at Olathe; Wilder & Palm, Lawrence; Lyman, at Topeka; Howe & Co., Osage; Butler & Co., Peabody; Smythe & Sons, Wichita; A. M. Barnett, Newton; S. Winfield, Chanute; E. H. Edwards & Co., Parsons; Jones & Slater, LaCygne; R. T. Stokes, Garnett; C. E. Merrifield, Indianapolis, Ind.; J. G. Gagle, Dayton, Ohio; John Patterson, Columbus; Traverse, Newark; Jeff Sapp, Mt. Vernon; M. S. Clark, Caledonia; D. M. Pruden, Sydney; Davis & Co., Muncie, Ind.; B. F. Alford, Anderson; Patterson & Tomlinson, Logansport; Beardsley & Co., Layfayette; W. W. Bedford, Rensselaer; R. Fancher, Crown Point. These are the men I sold to, to the best of my recollection, in the year 1879.

X Q. 147. Please state the names and addresses of the parties to whom you sold your cultivator springs of the form shown in the patents in suit in the years 1880 and 1881?

(Objected to as not cross examination and immaterial.)

A. A part of the customers to whom I sold for the trade of 1880 are as follows: W. W. Marberg, Atchison, Kan.; V. W. Parker, Atchison; Taylor & Delano, Fulton; Lawrence Plow Company, Lawrence; A. J. Clemons, Olathe; R. T. Stokes, Garnett; A. W. Beck, Iola; D. W. Finny, Neosha Falls; S. Winfield, Chanute; E. H. Edwards & Co.. Parsons; B. G. Sweet, Walnut; John M. Cooper, Baxter Springs; A. Hood, Columbus; Outt & Whitman, Independence; S. J. Smith & Co., Emporia; Howe & Co., Osage City; F. C. Smythe & Sons, Wichita; Asa Gillett, Cotton Wood Falls; S. Myton, Winfield; H. L. Farrand, Hobard, Ind.; F. W. Bedford, Rensselaer; C. B. Lyon, Delphi; Hughes & Smith, Galena, Ohio; J. H. Traverse, Newark; J. G. Gagle, Dayton. That seems to be as far as the record I have before me of the sales of 1880 goes. For 1881, W. W. Marberg, Atchison, Kan.; Eli Gaping, Kingston, Mo.; D. W. Finny, Neosha Falls, Kan.; Howe & Co., Osage City; J. F. Steel & Co., Parsons; Thomas Bros., Onaga; A. Benton & Sons, Louisville; S. Armsby, Pleasanton; Hannan & Elson, Clifton; J. L. Barnes, Grenola; E. Walton,

Salina; Simon Clark & Co., Emporia; Evans & Clusen, Larned; Warner Bros., Carthage, Mo.; Davis & Miller, Aurora; L. Hoover, Hillsboro; Kan.; S. D. Buck, Montevalle, Mo.; A. T. Lowry, Rockville; Clark & Burns, Appleton; C. W. Bullett, Virgil City; Haveley & Hall, Butler; John Carson & Son, Boliver; A. B. Lafferty, Cambridge, Ill.; Otto Nass, Sedalia, Mo.; Hapgood & Co., Alton, Ill.; Sullards & Ballord, Shell City, Mo.; W. H. Krum, Malta Bend, Mo.; Shroul & Crowse, Syracuse, Mo.; Smith & Guthrie, Erie, Ill.; Syler & Clemons, Prophetstown; C. L. Parkhurst, Linden; J. R. Isdell, Walnut; Clesap & Isaac, Vanorron P. O.; W. S. Palmer, LaMolle; Michael Young, Arlington; P. Washington & Co., Hustonia, Mo.; Furgeson & Woods, Morrison, Ill.; Henry Tony, Roseville; L. D. Patch, Roseville; McAllister & Bowling, Columbia, Mo.; Joseph Torley, Okwaka, Ill.; D. B. Burdick, Carbondale, Kan.

X Q. 148. Do you know whether the Eagle Manufacturing Company afterwards discontinued the sale of these springs, or cultivators equipped with them?

A. They changed the construction entirely, not entirely but partially, but continued selling spring cultivators. The sale of those without springs, I think, discontinued almost altogether.

X Q. 149. When did you discontinue the sale of the form of springs like those you took orders for as stated in your several previous answers?

A. I can't state positively, but I think they changed in the spring of 1882.

X Q. 150. Why?

A. I don't know.

X Q. 151. Were not complaints made by the parties who purchased the form of springs shown in the patents sued on?

A. I think not. I always understood the springs were satisfactory. They were to the trade that I sold to.

X Q. 193. Was this link secured to the lower end of the spring by bending an eye in the spring to receive the hook?

A. No. My recollection of the first link we made is this, and I think it was the only link made during this first experiment: It was first made with a hook on each end of it and made from three-eighths round iron and when that was first tried it was a very tight-fitting link and would bind in the corner, and in first working it, it would not slide up and down in the spring and after filing the face of it flat, and cutting out the corners we got the sliding motion. That same link was bent at various times so as to have more or less curve in it and to make it longer or shorter, but I think we used the same link during the entire first trial.

X Q. 194. You have spoken of the Interference proceeding and of tests made with your spring at the time of giving your testimony in that case. Please give the date that test was made?

A. I don't remember; I presume I could find out the date. I think that test was made at the time the testimony was being taken in that case.

X Q. 195. When was the testimony taken?

A. In October, 1880.

X Q. 196. Were the photographs you have referred to in your direct examination made at that time?

A. The originals from which these were taken were taken at that time. Yes, they were taken at that time.

Re-Direct Examination by Nathaniel French.

R-d. Q. 199. In your answer to cross-question 90 you stated in substance that your conversation with W. P. Brown was in September, and that you did not receive the Brown cultivator until the following February, is that answer correct?

A. If I stated it that way it is not correct; I should have said a year from the following February.

R-d. Q. 200. While you were with the Eagle Manufacturing Company did it, to your knowledge, ever have any Brown cultivators except the one concerning which you testified?

A. No, not to my knowledge.

R-d. Q. 201. In your testimony you have referred to your dairies showing places which you have visited and the dates when you visited them, did you have the diaries before you at the time?

A. Yes, sir.

R-d. Q. 202. Has it been your practice to keep a dairy, and for how long?

A. It has been my practice to keep one since 1856. But I have not got them all complete.

R-d. Q. 203. Who invented the springs shown in your patents in suit?

A. I did myself.

R-d. Q. 204. Did the springs made by you in the spring of 1879 having the form shown in your patent, all have an increasing lifting effect?

A. They did.

R-d. Q. 205. Would springs made after the drawings of your patents and combined in cultivators in the same manner as shown in the patent necessarily have an increased lifting effect, assuming that the springs have sufficient strength?

A. I think they would.

R-d. Q. 206. Did any of the springs made by you in the year 1879 and of the form shown in the patent, have a depressing effect as well as a lifting effect?

A. Yes, they did.

R-d. Q. 207. Did all the springs made by you in the spring of 1879 of the form shown in the patent, have both the lifting and depressing effect?

A. No, they did not; they were made both ways.

R-d. Q. 208. What difference was there in the construction of these springs?

A. Those that had the depressing effect had a little greater bend in them at the point marked *c* in patent 222,767.

R-d. Q. 209. Was the difference in the bend so great as to be necessarily noticeable in drawings of the size of the drawings of your patent?

A. No, because a very slight change in that bend was all that was necessary to give it a depressing effect. If the spring was so made and bent at the point *c* so as to produce no lifting or depressing effect on the beam when it was in an operative position, then the very slightest change imaginable in that bend would produce the double effect, and the greater the change the greater this effect would be.

R-d. Q. 210. When you applied for a patent on this invention did you make one or two applications?

A. I made one.

R-d. Q. 211. How did you afterwards come to divide your application and obtain two patents instead of one?

A. In the original application there were claims claiming broadly the combination of springs with a cultivator arch and beam in such a manner as to act with increasing force as the beam was raised, and there were other claims for the combination of the spring of the cultivator arch and beams in such a way as to give it the double effect of acting with increasing force as the beam raised and in depressing the beam when it was in a cultivating position. After the application had been on file for some time, my attorney advised me that certain of these claims would have to go into interference with other applications then on file, but that he had not been cited to any application or patent showing or claiming the combination of a cultivator arch, spring and beams, in such

a way as to produce the double effect of lifting on the beams when they were out of the gronnd and depressing them when they were in. And that if I saw fit it was allowable in the office and we could separate our application and have the claims last referred to allowed at once and make those claims which were subject to interference the subject matter for a separate patent. This was done and the two patents issued.

(So much of the foregoing answer as relates to what came through a third party is objected to as hearsay.)

Adjourned until 2 P. M.

Resumed at 2 P. M.

R-d. Q. 212. Referring to the rough sketch made by you and offered in evidence in the Interference case and marked Exhibit No. 7, in the Matter of the Interference Shaver *v.* Brown *v.* Wright, please state how devices made like that sketch would operate?

(Objected to because the exhibit itself is the subject of objection.)

A. It will operate in substantially the same manner as devices shown in patents issued to me before referred to, that is to say, there will be no lifting strain or tendency on the beam when it is down in an operative position; the spring would lift the beam and hold it above in an operative position in the same manner described in the construction in the patents.

R-d. Q 213. As a spring acts in lifting the beams it loses its tension, does it not?

A. Yes, it must necessarily do that.

R-d. Q. 214. Then how do you account for the fact that there is an increasing lifting effect accompanying the loss of tension? I refer now more particularly to the device constructed according to the sketch just mentioned.

A In this sketch and in all others the gain in leverage must be greater than the loss in tension; in this sketch and in all others made of a spring to operate as I have described, that is to say, with increasing lifting force as the beam rises, it is necessary to have in the construction some dead point or dead center, and when the beams are in the ground in operative position the strain of the spring is through that dead center; and as the beam is raised out of an operative position, the line of draft or the strain of the spring must be moved away from that center and as that line moves away from the center, just so fast is the leverage on the beams increased, and that is what causes the spring to operate as described with increasing effect and increasing leverage as the beam rises.

R-d. Q. 215. Where is the dead center in the sketch referred to?

(Objected to as immaterial.)

A It is the center of the axle and coupling.

R-d. Q 216. In what line does the spring act with the parts shown in the position shown in the sketch?

(Objection repeated once for all.)

A The line of strain is a straight line drawn from the point marked *b* to the point marked *e*, being the front end of the connecting link and the point of contact of the other end of that link and the spring This line, when the beam is down, would pass through the center marked *c*, indicating the center of the axle.

R-d. Q. 217. Where would this line be as the beams are raised with reference to the axle?

A. The line referred to would always be a straight line from the point marked *b* to the point marked *e*, and that line would move away from the dead point, which is the center of the axle, as the beam is raised, and would move toward it and pass through it as the beam is lowered.

R-d. Q. 218. Referring now to the Brown cultivator as reconstructed by you in 1878, please state the operation of the spring when the beam was down and also as it rose.

A. The operation of the parts in that cultivator is the same as those described in the sketch just referred to. In both cases we have a cultivator arch and a spring, and cultivator beam, and an axle Referring to photograph No. 3 of the Brown cultivator which I have before me, the beam is represented in an operating position; the spring is at its greatest tension and the dead point through which its power is exerted is the cultivator axle, the same as in the other sketch; the straight line connecting the spring to the arm in the Brown cultivator is the line of strain which the spring will always exert, and that line, when the beam is down, as shown in the photograph, will pass through the axle or dead point, and as the beam is raised above an operating position that line will move away from the dead point, will increase the leverage and the raising power of the spring.

R-d. Q. 219. Referring now to figures 3 and 5 of your patent 242,497, please explain the operation of the device?

(Objected to as not proper re-direct and because the patent itself is the best explanation of what it contains; also as improper in rebuttal.)

A. Referring to figures 3 and 5 in the Wright patent 242,497, I find substantially the same parts, that is cultivator spring, arch and axle combined in such a way as to work in the same manner described in the other sketch, that is to say, referring to figure 3 we have a spring attached to the arch exerting a force in a line which extends from the point where the spring is in contact with the roller on the beam directly through the axle of the cultivator and the cultivator coupling, and in that position while the tension of the spring is the greatest it produces no lifting effect upon the beam. As this beam is raised, as is indicated in figure 5, this line of tension was moved further away from the dead point or center of the axle and coupling, and as in other cases the further that line gets away from the center or dead point the more effective will be the lifting force of the spring. This line of force or pressure in the figures referred to will always pass through the center of the roller and the point of contact between the spring and the roller. And as a line drawn through those two points approximates or approaches the center of the axle the lifting force of the spring is decreased, and as that line moves away from that center the lifting force is increased.

R-d. Q. 220. What is the operation of the devices shown in figures 1, 2 and 4 in that patent as compared with the divices shown in figures 3 and 5 State generally?

A. The operation is the same. The cultivator axle remains and represents the dead center we were talking of; the line in which the force of this spring is always exerted is a line drawn through the center of the roller and the point of contact of the roller and the spring, and whenever that line approaches the dead point, or center of the axle, the lifting force of the spring is decreased, and when that line moves away from the center of the axle the lifting power or strain of the spring is increased?

R-d. Q. 221. On the second page of patent 242,497, commencing at line 120, you state, "among other arrangements that may be substituted for that shown is that of having a radius bar or link introduced between the spring and beam as a substitute for the curved spring and roller." Will you please make two rough sketches showing this substitution?

(Objected to as not being re-examination and not rebuttal.)

A. I have made two sketches that represent forms that I had in my mind at that time and give them to the notary as part of my answer.

(The same are marked "Complainant's Exhibit, Wright's Sketch of Radius Bar Modifications.")

(The sketches are objected to by counsel for defendant as irrelevant, incompetent and not in rebuttal.)

R-d. Q. 222. What would be the operation of these radius bar modifications shown in your sketch as compared with the devices shown in your patents in suit, your reconstructed Brown cultivator, and the construction shown in the rough sketch which you made during the Interference case?

(Same objection as above.)

A. The operation of the combinations shown in the sketch I just made, and in all those mentioned, is just the same, and in all cases it is that the lifting strain of the spring, or force, is increased just as soon as the line of strain moves away from the center of the axle or coupling, and it increases as that line moves away from that center and decreases as the line moves toward the center; and this is so in all of the separate devices described.

R-d. Q. 223. Referring now to patent 259,626, to you, and more particularly to figures 1 and 2 thereof, please state the mode of operation of the spring devices shown in said figures?

A. This operates exactly the same; the axle of the cultivator coupling acts as the dead point and the line of the strain of the spring always passes through the upper end of the spring and the point of contact between the spring and the arm, and whenever that line passing through those two points goes through the center of the axle also, there will be no lifting force exerted on the beams and just as that line is moved away from the center of the cultivator axle the lifting force of the spring will be increased, and as that same line approaches the center of the axle it will be diminished.

R-d. Q. 224. What are the means used in this spring construction?

A. I should say in all these cases the means used is a spring, the cultivator arch and beam combined.

R-d. Q. 225. Is there any difference in the means used in your last patent, 259,626, your patent, 242,497, your reconstructed Brown cultivator, your sketch made during the Interference case and your sketch of the radius bar modifications, except as to the shape or form of the parts, and is there any difference in the mode of operation?

A. The mode of operation in all of them is certainly the same; the means are the same, the construction only being different; I mean by saying that the means are the same that the same parts exist in all of them and that they are combined in all of them in such a way as to produce the same result; there being a spring in each case, cultivator arch and axle and beams combined, and in each case the parts are arranged so that the force of the spring or the strain of it is always thrown through the dead point when the beams are in operative position.

R-d. Q. 226. In answer to cross-question 138 you stated that your patent 259,626 was independent of your patents 222,767 and 242,497. Did you mean by that that the device shown in patent 259,626 did not embody the invention of your prior patent, 242,497?

A. No, I do not mean that; I understand that all patents are independent of other patents, but any patents may be issued that embody a number of features shown in prior patents; I consider that the patent, No. 259,626, is on a matter of construction, and I believe that it does embody the same principles that are set forth in my previous patents and that it will operate the same way. I can find in this patent a combination of a spring, radius bar, cultivator arch and beam so combined as to produce an increased lifting effect on the beam when it is raised above an operative position, which is the same combination described in my previous patent.

R-d. Q. 227. Somewhere in your cross-examination you testified that after you reconstructed the Brown machine in 1878, and made the same work satisfactorily, according to your idea of how a spring should work, you continued to experiment with the Brown spring for about a year. Why did you make further experiments with the Brown spring when you had already produced a satisfactory construction?

A. I was trying to get rid of his pipe box and arm.

Re Cross-Examination.

R-X-Q. 228. Did you ever construct a full sized spring equipment of the kind shown in either of the views in "Complainant's Exhibit, Wright's Sketch of Radius Bar Modifications?"

A. We had in the shop at one time on a cultivator that we were experimenting with there a radius bar in the position as illustrated in the first sketch. I do not remember of ever having one in the position as illustrated in the second.

R-X-Q. 229. Did yon ever try it in the field?

A. No.

R-X-Q. 230. Did you make any more like it.

A. No.

E. A. WRIGHT.

Adjourned to 5:30 P. M., until 10 A. M., September 4.

Q. 12. Did you try the cultivator to see how the spring operated?

A. I think I did.

Q. 13. Did you see it tried, if you did not try it yourself; I mean in the building of the Eagle Manufacturing Company?

A. I certainly did.

Q. 14. Did both springs have the same operation, if not, what was the difference?

(Objected to because it does not appear that the witness has a knowledge of the difference, nor had the means of ascertaining).

A. The spring that I knew at the time as Mr. Wright's spring helped to raise the handle; to raise the shovels out of the ground or in hanging them up; while the other spring did not possess these points in helping the operator to handle the shovels.

Q. 15. How did the spring that you speak of as a Wright spring, act as the beams were raised? Did it increase or decrease its lifting effect?

(Same objection as above).

A. I don't know that I get your idea, Mr. French, in what you ask there; can you make it any clearer or any plainer?

Q. 16. What I wished to get at was this, whether the Wright spring lifted more as the beam was raised, and did not lift when the shovels were in working position, if you remember?

(This question is further objected to as leading).

A. I don't remember.

Q. 17. Please look at these photographs which are marked Exhibits Nos. 1, 2, 3 and 4, in the Matter of Interference, Shaver *v.* Brown *v.* Wright, and state whether, according to the best of your recollection, these photographs show correctly the cultivator which you then saw.

A. They do.

A. K. Raff.

Ten o'clock, September 4.

E. P. LYNCH, a witness produced on behalf of complainant, testifies as follows:

DEPOSITION OF E. P. LYNCH.

Direct Examination by Nathaniel French.

Q. 1. State your name, age, residence and occupation.

Deposition of E. P. Raff.

A. E. P. Lynch; Davenport; 49; manufacturer of agricultural implements.

Q. 2. What is your position in the Eagle Manufacturing Company, and how long have you been connected with the company?

A. I am president and superintendent, and have been connected with it since its organization. It was organized in 1872.

Q. 3. During all of that time have you been superintendent of the shops of the Eagle Manufacturing Company?

A. I have been sole superintendent all the time except the first one or two years, when I was assisted in that duty by Mr. Raff. Mr. Raff is dead.

Q. 4. Prior to the organization of the Eagle Manufacturing Company were you in any way connected with the business of manufacturing agricultural implements such as cultivators, and if so, for how long a time?

A. I first became interested in manufacturing implements in 1863; at that time I was in a company known as the Raff, Cock & Co., this company continued business until 1872, when it was merged into the Eagle Manufacturing Company.

Q. 5. Were you with Raff, Cock & Co. until that company became merged in the Eagle Manufacturing Company, and what was the general nature of your work in that company?

A. I was with them all the time; the first two years of my connection with them the company was engaged in manufacturing reapers and mowers; after that they manufactured cultivators and did a general line of job work. During all this time I was acting in connection with Mr. Raff in superintending the works.

Q. 6. For the past twenty-six years have you been acquainted with the principle cultivators on the market during that time?

A. I have been acquainted with them.

Q 7. When did the Eagle Manufacturing Company commence selling spring cultivators or springs to put on their cultivators?

A In the spring of 1879.

Q. 8. Was that the spring cultivator shown in the Letters Patent in suit herein to E. A. Wright?

A. It was.

Q. 9. What, if anything, do you know about E. A. Wright making an invention of a spring cultivator prior to the year 1879; and if you know anything about it you may state to the best of your recollection when he first made such an invention, if any, and how you know such facts?

A. I know all about the invention of Mr. Wright's practically. Mr. Wright was engaged in traveling for the Eagle Manufacturing Company as salesman; during his trips through Indiana and Ohio he came in contact with cultivators made at Malta, Ohio, on which there was a suspending spring. On his return to the factory he told me about this spring cultivator and about the probable necessity of our having to build a cultivator with springs; later, in the winter of '76 and '77, he gave me information about a spring cultivator about to be put on the market by The Brown Manufacturing Company, of Zanesville, Ohio, and urged at that time that it was now necessary for us to attach a spring to our cultivator; at the same time stating

that he did not believe any of the springs were made on the correct principle, that all these springs were arranged so that when under the greatest tension they operated injuriously to the efficiency of the cultivator; he went on to explain his views as to the proper construction. Inasmuch as cultivators at this time, that is with springs, had not made their appearance in the western market, I did not fully appreciate the importance of all he said; he, however, continued talking and writing about springs and giving ideas by rough sketches of the construction of springs at various times through the season, until in the winter of 1877 and 1878 he wrote me or the company that it was absolutely necessary to have a spring on our cultivator if we wished to stay in the Indiana and Ohio trade; up to that time I had not seen the spring cultivators that he referred to, and either wrote him myself or had a letter written to him, to procure a Brown cultivator having this spring attachment and send it to us. This he did in the latter part of the winter, and on his return from a trip, at my request and in furtherance of his own wishes, he re-arranged the spring upon this cultivator so that the effects that he deemed necessary or essential to the success of the working of the spring were gained. I know these facts not only through my own knowledge but the corroborative evidence of the shipping bills for the cultivator, and the entries upon our books of the freight charges.

Q 10. Please state more in detail what Mr. Wright did in re-arranging the parts of the Brown cultivator and the results which he accomplished?

A. The changes Mr. Wright made in this Brown cultivator were to change the sleeve on which there was a projecting arm, which, as Brown constructed the cultivator, stood erect, so that the projection was practically horizontal; he then lowered the spring which was attached to one side of the arch of the axle so that the free end of the spring or lower end, came down to a level of the axle of the cultivator, and then connected this free end of the spring to the outer end of the projection on the pipe box by means of a rod of iron; this rod was bent upwards in the center so as to pass over the pipe box on the axle, the forward end of the rod bent at right angles so to engage the front surface of the spring, the position taken by the different parts (the lower end of the spring, and the outer end of the projection) was such that when the cultivator beam was in operative position the strain of the spring or force exerted by it passed in a line practically through the axle to the end of the projecting arm; the effect of this arrangement was that while the spring was under its greatest tension on the beams when they were in operative position it exerted no lifting effect upon the beams. And as the beam was elevated from its operative position the force exerted by the spring came into action and elevated the beam to the necessary height.

Q. 11. Please look at the photographs marked "Exhibits Nos. 1, 2, 3 and 4," in the Matter of the Interference, Shaver *v.* Brown *v.* Wright, and state whether they correctly represent the Brown cultivator as changed by Wright in the spring of 1878?

A. They do.

Q. 12. You testified in the Interference case last mentioned?

A. I did

Q. 13. During the Interference case last mentioned, did you have the Brown cultivator here at Davenport during the taking of the testimony?

A. We did.

Q. 14. When were these photographs last mentioned taken, or the originals of which they may be copies?

A. I believe they were taken during the Interference trial in October, 1880.

Q. 15. Was the Brown cultivator at the time these photographs were taken in the same condition as to arrangement of parts in which it was in the spring of 1878.

A. It was.

Q. 16. When this cultivator was changed in the spring of 1878, was it at that time tested, and if so, where?

A. It was tested only on the shop floor.

Q. 17. How did it work?

A. It operated satisfactorily.

Q. 18. How would it have worked at that time if put into ordinary use in the field?

A. I believe it would have worked satisfactorily.

Q. 19. Did you ever try it in the field, and if so, when, and how did it work?

A. We tried the cultivator in the field at the time we were taking testimony in the Interference case in October, 1880. It worked satisfactorily.

Q. 20. How was it as to being a practical operative machine?

A. The feature of the cultivator that we wished to test in the field, namely, the spring as arranged by Mr. Wright, did its work with entire satisfaction to us, accomplishing all for which it was designed.

Q. 21. Was your testimony as given in the Interference case now correct to the best of your belief, and have you discovered any reason for changing it?

A It was correct, and I have no reason for changing it.

Q. 22. How did the spring cultivator that you commenced putting out in the spring of 1879 operate, as to being successful and practical? I refer to the operation of the spring equipment—I refer to the spring equipment as shown by the Wright patents in suit herein.

A. The spring equipment worked well and was satisfactory.

Q. 23. Did the Eagle Manufacturing Company to your knowledge ever have in their shops any of the Brown cultivators except the one you have already mentioned?

A. They did not.

Q 24. During the time that you have been engaged in manufacturing agricultural implements have you had practical experience in the actual construction of cultivators and in their operation in the field, so as to understand the construction of different cultivators, the mechanical principles involved in their construction and the way in which they would operate in actual use?

A. During all the time the Eagle Manufacturing Company have been manufacturing cultivators, which is since its organization, I have been actually engaged in manufacturing cultivators, experimenting with new devices and making such field tests as I deemed necessary. I believe I have a thorough knowledge, practically, of this branch of the business.

Cross Examination.

X Q. 33. Was the Wright spring arrangement applied to one side only of the Brown cultivator in 1878?

A. Yes.

X Q. 34. Was the link used to connect the spring and the arm in the Wright spring equipment in 1880 on the Brown cultivator the same link or a different one from that used in 1878?

A. My recollection is that it was a different link.

X Q. 35. How many different springs were used by Mr. Wright in connection with the Brown cultivator during his experiments with that machine, commencing in the spring of 1878?

A. I only recollect Mr. Wright using one spring—the spring that was attached to the cultivator.

X Q. 36. Would you state positively that he did not use more than the one spring which was originally a part of the Brown cultivator?

A. I could not say that for I was not with Mr. Wright nearly all the time he was experimenting with it.

X Q. 37. In the Interference proceeding between Wright and the other parties mentioned in your direct examination, you were asked: "Did you, at that time (meaning in the winter of 1876 and 1877), understand clearly any method proposed by him for carrying his invention into use," and you answered as follows: "I do not remember that he went into any particular detailed method at that time, while describing this new Brown cultivator. Mr. Wright had frequently talked to me about springs after that time and before it, and talking over various methods, the details of which I can't give, until the approach of the following spring of 1878, when we together made numerous sketches of springs that embodied the idea that Mr. Wright considered correct, which

was to arrange the spring so that its lifting effect would be decreased when the beams were in operative position." Did you testify as I have stated?

A. Yes, I did.

Re-Direct Examination.

R-d. Q. 108. What if any change has taken place in regard to the use and manufacture of spring cultivators since Wright's spring was put on the market in the spring of 1879?

A. At that time there were but three manufacturers who were in any way prominently engaged in the manufacture of cultivators using springs; the springs used by them being of the suspending kind; after the Wright spring was first put on the market and within a very short time all manufacturers of cultivators adopted springs. Practically every one of those adopting springs after 1879 used springs in which the effects produced are as shown in the Wright patent. At a rough estimate I would say 9 out of every 10 manufacturers use the spring with the increased lifting effect.

R-d. Q. 109. I call your attention to cross-question 85 which read: "Under what patent is your company putting its present form of spring on its cultivators?" To this question you answered: "I believe it is under patent issued May 9, No. 257,730." What did you understand the question to call for, and what did you mean by your answer?

A. I understood by the question the form of spring arrangement. I have always understood and believed that we at all times have manufactured springs that were under the Wright patents, the spring adopted by us in 1884 embodying in it not only the Wright patents but an additional feature which was the subject of the patent granted to myself.

R-d. Q. 113. When did the Eagle Manufacturing Company cease putting on the market spring cultivators like those shown in the drawing of the Wright patents?

A. To the best of my recollection we practically ceased putting on cultivators with the Wright spring at the end of the season of 1883.

R-d. Q. 118. Going back now to the Brown cultivator as reconstructed by Wright in the spring of 1878, please state why the Eagle Manufacturing Company did not make and sell such cultivators.

A. After Mr. Wright had changed the cultivator so as to get the effects of his spring attachment, he called me to see it, and advised that we should make a cultivator of this kind. I replied to him that Mr. Brown had a patent upon the arm—that we did not wish to use his invention. It was for this reason that we did not adopt this machine.

Re-Cross Examination.

R-X-Q. 119. Do you now use a pipe box and arm as a part of the spring equipment on your cultivator?—and how long have you been using this feature?

A. We have used it on our cultivators since 1884.

R-X-Q. 120. It has been stated that the 1878 Wright spring arrangement was not adopted because the pipe box and arm involved in it would have infringed the patent to Brown of 1877. Please state how the present construction having a pipe box and arm, and adopted in 1884, avoids infringing that patent?

(Objected to, because incompetent and entirely immaterial).

A. I think it infringes the Brown patent.

R-X-Q. 121. Then it appears that some arrangement has been made with the owners of the Brown patent in question whereby the use of the pipe box and arm is provided for. Is this so?

(Council for complainant instructs the witness that the question is not only immaterial but also an uncalled attempt to inquire into private business of the Eagle Manufacturing Company, and that he need not answer the question).

A. Under instructions of counsel I will not answer that question.

R-X-Q. 122. Is the use of the pipe box and arm by the Eagle Company in violation or by permission, under the Brown patent in question?

(Same objection as stated).

A. Same answer.

E. P. LYNCH.

Deposition of G. Watson French.

G. Watson French, a witness produced on behalf of complainant being duly sworn, testifies as follows:

Direct Examination by Nathaniel French.

Q. 1. State your name, age, residence and occupation.

Deposition of G. Watson French.

A. G. Watson French; age, 31; Vice-President Eagle Manufacturing Company, Davenport, Iowa.

Q. 2. In your previous deposition taken in this case, you stated in substance that the Eagle Manufacturing Company, sold cultivators with springs like those shown in the Wright patent until it adopted its present cultivator known as the Golden Eagle. Was that statement correct, and if not, please correct it?

A. It was not. In 1883 we commenced the manufacture of the spiral spring such as is used on our Golden Eagle cultivator, and also manufactured the old style of Wright spring, which we had in stock. In 1884 nearly or quite all of the cultivators manufactured by us with springs had the spiral springs on. In my last testimony I had forgotten that there was one year intervening between the year we manufactured the old form of Wright spring and the Golden Eagle cultivator.

Q. 3. Do you remember anything about the Eagle Manufacturing Company obtaining a Brown cultivator, and if so, when was it?

A. In 1878 Mr. Wright purchased in Ohio a Brown cultivitator and brought it to the office of the Eagle Manufacturing Company, and began experimenting on a new spring to raise the drag bar from the ground and to aid the operator in working the machine

Q. 4. Do you remember whether the Eagle Manufacturing Company received the freight bill for this cultivator?

A. I remember our treasurer, Mr. Sweeney, finding the freight bill among our files.

Q. 5. When?

A. When called upon to testify in our Interference, in the Wright Interference case, in 1880.

Q. 6 What time in the year 1878 was it that this Brown cultivator was received by the Eagle Manufacturing Company?

A. In February.

Q. 7. State if you can remember, what, if any, changes Wright made in the Brown machine and the result of those changes?

A. Wright threw forward the arm of the pipe box, bent forward the bottom end of the flat spring on the Brown cultivator and connected the pipe box arm to the flat spring by means of a link. This change resulted in giving an increasing effect to the springs in their action on the gangs when raised out of the ground, and the gangs when elevated to the highest point ready to be hung up on the carrier iron, were sustained by the strength of the spring.

Q 8. I understood you to state in your last answer that the arm on the pipe box is moved forward, is that correct?

A. It is not; the arm of the pipe box was moved backward and rearw rdly.

Q. 9. About when were these changes made by Mr. Wright with reference to the time when the cultivator was received?

A. Very shortly after the cultivator was received.

Q. 10. Did you ever see the cultivator tested in the shop or in the field, or ever test it yourself, and if so, when?

A. In the spring of 1878 I saw it repeatedly tested in the shop and tested it myself in the shop; in 1880 I saw it tested in the field.

Q. 11. How did it operate in these tests as regards being practical or successful or otherwise?

A It was practical and successful, though to make it a salable machine, or a desirable machine to put on the market, it would have been better to have made a stronger fastening for the coupling to the pipe box.

Q. 12. Did these parts come loose at all during the tests which you made?

A. No.

Q 13. Then why would it have been desirable to have made a stronger fastening?

A. I stated it was desirable to have made a stronger fastening for the machines if they were to be manufactured in quantities and sold because it is desirable to always use the best device. While Wright's device was practical, it was not the best.

Q. 14. To what do you refer to in the use of the word device in your last answer?

A. To his having used a set screw to fasten the clevis to the pipe beam.

Q. 15. Are cultivators ever put on the market in which set screws are employed to fasten the coupling to the axle or sleeve.

(Objected to, as it does not appear that the witness knows anything about the matter enquired of outside of his own manufactory.)

A. Yes, I have seen such cultivators, while in the employ of the Eagle Manufacturing Company as traveling salesman.

Q. 16. Is T. O. Sweeney now in the city of Davenport?

A. No.

Q. 17. Is George H. French who testified in the Wright Interference case in 1880 now living?

A. No.

Q. 18. Did you testify in the Interference case?

A. I did.

Q. 19. Was your testimony, as then given, correct?

A. Yes.

Q. 20. Have you since read the same?

A. No, not within two years.

Cross-Examination.

X Q. 21. What time in 1878 was the Brown cultivator received?

A. In February; the latter part of the month.

X Q. 22. Was this machine sold and shipped away in 1879?

A. It was shipped away, in 1879 I think, to Columbus, Ohio, and disposed of by our agent, John Patterson.

X Q. 23. Did you ever see it again?

A. Yes; it was returned to us to be used in some spring suit.

X Q. 24. How do you know that it was the same machine?

A. We knew to whom Mr. Patterson shipped the machine, and sent a man to borrow it from him.

X Q. 25. Please state how you knew who Patterson shipped it to?

A. He informed us at the time to whom he shipped it.

(The answer is objected to as hearsay.)

X Q. 26. Please state whether the Brown cultivator, when shipped to Columbus, had the Wright spring arrangement on it?

A. I don't know.

X Q. 27. Had the machine which was received for use in your spring suit the Wright spring arrangement applied to it at the time it was received?

A. No.

X Q. 28. Did the Eagle Manufacturing Company own the Wright invention at the time of the Eagle 1878 experiments?

A. No.

X Q 29. Did it own the invention at the time of the Interference proceeding and did the company pay the expense of that Interference so far as Wright's invention is concerned?

A. Yes.

Re-Direct Examination.

R-d. Q. 30. When the Brown cultivator was tested in the field, during the taking of testimony in the Interference case in 1880, were any photographs taken of the cultivator?

A. Yes.

R-d. Q. 31 Please look at the photographs marked "Exhibits 1, 2, 3 and 4, in the Matter of the Interference Shaver *v.* Brown *v.* Wright," and state whether or not according to your recollection they correctly show a cultivator with the changes in it made by Wright in the spring of 1878.

A. They do.

R-d. Q. 32. You have testified that the Brown cultivator was sent to Patterson in 1879 as you thought and also that you had it here in 1880 when testimony was being taken in the Interference case. From whom did you receive the cultivator?

A. From John Patterson, Columbus, Ohio.

R-d. Q. 33. On cross-examination you stated that you had seen the Brown cultivator and received it again after first receiving it in 1878 and that you had got it to use in some spring suit. What was that suit—was it the Interference proceeding or something else?

(Objected to as leading.)

A. It was the Interference proceeding in 1880.

(Signed.) G. WATSON FRENCH.

Subscribed and sworn to before me, this 5th day of September, 1889.

[SEAL] EFFIE E. MORAN,
Notary Public.

"COMPLAINANT'S EXHIBIT BRADLEY FINAL DECREE."

EFFIE E. MORAN, N. P.

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE SOUTHERN DISTRICT OF IOWA, EASTERN DIVISION.

The Eagle Manufacturing Co., *v.* David Bradley & Co. } *No. 2,229. Eq.*

FINAL DECREE.

Final Decree.

This cause coming on for hearing on October 15, 1889, being the first day of the May term of said court, on the report of the master, and thereupon, in addition to the matters adjudged and decreed in the decree hereinbefore rendered on May 23, 1888, it is now ordered, adjudged and decreed that the report of the master be confirmed, and that the complainant have and recover of the defendant the sum of one cent nominal damages, and the costs of the reference to the master to be taxed.

(Signed) J. M. LOVE.

[Endorsed]: No. 2,229, Eq. *The Eagle Mfg. Co.* v. *David Bradley & Co.* Decree. Filed Oct. 15, 1889.

ED. R. MASON, *Clerk.*

IN THE CIRCUIT COURT OF THE UNITED STATES, FOR THE SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

I, E. R. Mason, clerk of said court do hereby certify that the transcript to which this certificate is attached contains a full, true and complete copy of the decree in a certain cause in said court adjudicated wherein the Eagle Manufacturing Company, was plaintiff, and David Bradley *et al.*, were defendants, as full, true and complete as the original of the same now remains on file and of record in my office.

In testimony whereof, I hereunto subscribe my name and affix the seal of said Court at office in the City of Des Moines in said district, this 17th day of October, A. D., 1889.

(SEAL) E. R. MASON,

Clerk U. S. Circuit Court, Southern District of Iowa.

[Endorsed]: Filed Feb. 3, 1891.

WM. H. BRADLEY, *Clerk.*

Eagle Manufacturing Co., *v.* David Bradley Mfg. Co. } *Complainant's Exhibit Bradley Decree. K. S. Holmes, Notary.*

IN THE CIRCUIT COURT OF THE UNITED STATES, SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

Present: The Hon. James M. Love, District Judge, and the Hon. O. P. Shiras, District Judge, of the Northern District of Iowa.

The Eagle Manufacturing Co., *Complainant,* *v.* David Bradley & Co., *Defendant.* } *No. 2,229. In Chancery.*

DECREE.

Decree. This cause came on to be finally heard upon the pleadings and proofs and was argued by counsel for the respective parties, and the pleadings and proofs having been duly considered, it is hereby this 23d day of May, 1888, ordered, adjudged and decreed as follows, viz: That the letters patent referred to in complainant's bill, being letters patent of the United States granted unto Edgar A. Wright for improvements in cultivators No. 242,497, and dated June 7, 1881, is a good and valid patent, and that the said Edgar A. Wright was the first and original inventor of the improvements therein described and claimed, and that the said complainant had at the commencement of this cause a good and legal title to said letters patent No 242,497 as averred in complainant's bill, and

that the said defendant has infringed the said patent and upon the exclusive rights of the complainant under the same, as claimed in the first four claims of said patent.

And it is further ordered, adjudged and decreed that the defendant above named, its servants, agents, operatives and workmen, each and every one of them, be and they are perpetually enjoined and restrained from either directly or indirectly making, using, or selling to others to be used, cultivators constructed and operated in the manner and upon the principle described in said letters patent of the United States, No. 242,497.

And it is further ordered, adjudged and decreed that the complainant recover of the defendant the profits which it has received or made, or which have accrued to it, by the use or sale of the improvements described and secured by said letters patent at any and all times since June 7. 1881, and also the damages which the complainant has sustained thereby.

And as it does not appear to the court what said profits and damages are, it is further ordered, adjudged and decreed that this cause be referred to George F. Henry, Esq., a master in this court, to take and report to the court an account of the profits which the defendant has received or which has arisen or accrued to it from the use or sale of said improvements and to ascertain and report the damages which the complainant has sustained thereby since June 7, 1881, from the papers and evidence in the cause and from any evidence which either party may produce before him of the same, and when he shall have taken an account of said profits and assessed said damages, he shall return the same to this court for further action in the premises.

And it is further ordered, adjudged and decreed, that the complainant, on such accounting, has the right to cause an examination of the officers, agents and employes of the defendant, *ore tenus*, or otherwise, and also the production before said master, at such time as said master may order of the books, vouchers and docnments of the defendant, and that the officers, and employes of said defendant attend before said master from time to time within this district as said master shall direct. And it is further ordered that the question of increase of damages and all other questions be reserved until the coming in of the masters' report.

And it is ordered that the parties and master may apply upon the foot of this decree for such other and further order of instruction as may be necessary.

And it is further ordered, adjudged and decreed that the complainant recover of the defendant the costs of this suit to be taxed.

(Signed) J. M. LOVE, *Judge.*

[Endorsed]: *Eagle Manufacturing Co.* v. *David Bradley & Co.* Decree, filed May 23, 1888.

ED. R. MASON, *Clerk.*

[Endorsed]: Filed Feb. 3, 1891,

WM. H. BRADLEY, *Clerk.*

DEFENDANT'S TESTIMONY.

Present: NATH'L FRENCH, ESQ., for complainant; L. L. BOND, ESQ., for defendant.

Defendant's Testimony.

At ten o'clock in the forenoon, pursuant to agreement, the parties to the said causes, by their counsel as above, met at the office of West & Bond, Rooms 50-54, No. 204 Dearborn street, Chicago, Illinois, whereupon the following proceedings were had:

The parties hereto stipulate that this deposition may be used in the case of *The Eagle Manufacturing Company* v. *The Moline Plow Company*, pending in the United States Circuit court for the Northern district of Illinois, with the same force and effect as though taken therein.

The complainant waives all objection to the taking of this deposition prior to the filing of replications and the taking of complainant's *prima-facie* proofs in the above-named causes.

Complainant also consents to the taking of this deposition before Albert H. Adams, as special examiner, pursuant to the 67th rule, as amended, and also that an order may be entered at any time, *nunc pro tunc*, appointing him a special examiner.

The parties to both of said causes also stipulate and agree that depositions and other proofs may be taken by either party before any notary public, as special examiner under said 67th rule, as amended, upon giving reasonable notice of the time and place to the other party, and that orders may be entered, *nunc pro tunc*, appointing such notaries special examiners.

The parties also stipulate that either party may offer in evidence printed copies of the specifications and drawings of letters patent received from the Patent Office without certification thereof.

Deposition of Henry N. Dalton.

HENRY N. DALTON, a witness produced on behalf of the defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Deposition of Henry N. Dalton.

Q. 1. State your name, age, residence and occupation.

A. Henry N. Dalton; age, 58; residence, Oakland, California. I am a manufacturer of agricultural tools.

Q. 2. How long have you been engaged in the manufacture of agricultural tools and implements, and at what places have you been so engaged?

A. I commenced manufacturing agricultural tools in 1861 at Pacheco, Contra Costa County, California. I moved from there to Oakland in 1881. I purchased a business that was started in 1858, but commenced on my own account in 1861.

Q. 3. During your manufacture of plows and other tools and implements, did you make any provided with springs, and, if so, state when you commenced, how long you continued and what the object and purpose of applying springs was?

A. In 1865 I think is the first that I made a crank-axle plow, and tried some experiments with those crank-axles. I found that I was unable to lift it after I got it out of the ground; I could lift it all right to the top of the ground, but I found it was almost an impossibility to raise it any further—to get the plow above the ground—the weight of the plow was from, say, six to seven hundred pounds. Then I tried the compound lever; what I mean by that is, I increased my leverage by the addition of one more lever. Then I met with the difficulty of not being able to lift the plow a sufficient distance above the ground to clear the rubbish, or stubble, as we call it. In 1868, I hit upon the plan of the spring

to help to raise the plow above the ground. In 1869, I applied for a patent. The spring proved a success in every direction. I commenced manufacturing right there in 1868 or 1867, I am not positive which. I have continued to manufacture the plows with the spring to the present day. The object I had in that spring, is apparent enough, was to help raise it from the ground and prevent the lever from coming back when the plow was out of the ground. My experience with the crank-axle plows prior to the spring, if the lever got away, it was liable to strike the person, and in some cases I have known it to severely injure the person using it.

Q. 4. Please look at the patent now shown you, No. 95,437, dated October 5, 1869, to H. N. Dalton, of Pacheco, California, for an improvement in spring for gang-plows, and say whether or not that is the patent referred to by you in your last answer?

A. That is the patent referred to.

(The patent last referred to is offered in evidence by counsel for defendant, and the same is marked "Defendant's Exhibit Dalton Patent, A. H. A., N. P.")

Q. 5. Please state how the spring acted or operated in lifting the plow-beam.

A. The gravity of the plow coiled the spring up, which increased its tension. When the operator took hold of the lever to raise the plow out of the ground, the tension of the spring would exert an influence in the direction that he would move or direct the lever with his hand or foot. The lever was pushed down with the hand or foot, the tension of the spring following till the axle passed over the center of gravity, or at center of gravity, where the spring would hold the load of the plow at rest.

Q. 6. State what effect, if any, the loss of tension in the spring had on the lifting of the beam?

A. There is always tension on the spring; but after the axle has come near the center of gravity, the tension of the spring has a greater influence to hold the weight of the plow up,

Q. 7. As shown in the patent, the crank-lever is nearly horizontal, and the crank arms of the axle are vertical. In operating the plow in the ground, in what position, or in about what position, would the lever stand?

A. That is generally set to suit the operator. It generally sets perpendicular.

Q. 8. Have you brought with you a plow manufactured by you?

A. Yes.

Q. 9. State when that plow was made, and its history, so far as you know it.

A. That plow was manufactnred in 1875 or 1876, and it has been in constant use from that time until this winter. It was just laid up as I brought it away. I got it of James McKinney. The plow was sold to Edward Bent, of Martinez, Contra Costa County, California. James McKinney bought that plow at an administration sale in June, 1878, and I got it of him. McKinney bought another plow in 1877. McKinney lives at Martinez.

Q. 10. State whether or not the plow now standing in the hall adjoining the court-room, and marked by a tag "Defendant's Exhibit Dalton Plow of 1875" is the Bent plow you got of Mr. McKinney?

A. It is the same plow.

(The plow referred to is offered in evidence by counsel for for defendant, and the same is recorded "Defendant's Exhibit Dalton Old Plow. A. H. A., N. P.")

Q 11. About how many of these plows have you made and sold since you commenced making them?

A. Approximately, thirty a year, the highest for any one year being fifty, and the lowest, five.

Q. 12. How have the plows as you have made them agreed with, or differed from, the plow produced in their structure and operation, if at all?

A. There is no substantial change been made in them. They have simply been increased in strength and heft, that is, in the iron ones; we made some wooden ones the first year.

Q. 13. How were the wooden ones made?

A. The patent drawing shows the frame. The plows were bolted right to those beams.

Q. 14. What kind of agricultural implements do you understand that the term or name "gang-plow" covers?

(Objected to as incompetent.)

A. We generally use the term gang-plow in cultivators where we have small, reversible moulds. We call them cultivators as often as we do plows. I have manufactured and sold as cultivators mould-boards on the standards of such cultivators. When I took that patent out I thought it covered anything to cultivate the soil, as a plow or cultivator is used.

Q. 15. Are we to understand from your last answer that you have made plows like the "Exhibit Dalton Old Plow," with small mould-boards for use as cultivators?

A. No, sir. Those plows or cultivators that I used small mould-boards in; the standards and moulds are made or fastened to wooden frames mounted on wheels.

Q. 16. State whether or not the old plow produced by you, fairly represents the construction, operation, and spring action of the various spring plows manufactured by you?

A. Yes, sir; there is no change at all.

Cross Examination by Nathaniel French, Esq.

X Q. 17. To what use are the plows, such as the Exhibit Dalton Old Plow made by you, ordinarily put?

A. Cultivating the soil. It is also used for breaking the ground.

X Q. 18. What do you mean by cultivating the soil?

A. Working it over; harrowing is also cultivating; anything to kill weeds.

X Q. 19. Are those old plows made by you used for harrowing or killing weeds?

A. They are used for killing weeds. When our soil is turned over, we cross it after it has laid a spell, and the weeds have grown. We cross it to kill the weeds; they are not used for harrowing, for the reason that they don't spread over ground enough.

X Q. 20. About how heavy is your plow, "Dalton Old Plow"?

A. I think in the neighborhood of four hundred or four hundred and fifty pounds.

X Q. 21. How heavy is the plow you now make?

A. From six to seven hundred.

X Q 22. Did you put together the plow near the court room previously mentioned?

A. I saw it put together, and helped put it together.

X Q 23. I noticed a clutch at one end of the cranked arms of the axle. Please tell me what that is for?

A. To change the plane of the wheels after the furrow is struck out.

X Q. 24. Please explain how this change is made and its effect?

A. By simply releasing the clutch and changing the crank forward. It changes the plane of the wheels. If you want to plow three inches, you change the plane of the wheels three inches. It determines the depth you want to run your furrow. When you start in to plow both cranks are set parallel to each other; after you have struck the first furrow, it is necessary to make a change of the plane of the wheels to plow the depth desired; that is to say, one wheel is on the land and the other in the furrow.

X Q. 25. What difference was there, if any, between the plows made by you with wooden frames and the plow you have brought here with an iron frame, besides difference in material?

A. In the plow manufactured prior to the goose-neck iron beams, the frames were manufactured of wood and had cast-iron standards with moulds bolted to the frame. In other respects the plows are identically the same, and the operation is the same. In other words, iron has been adopted instead of wood for the frame.

X Q. 26. How many horses are used in running one of your plows?

A. In very light soil I have plowed with two horses. In heavy soil, six and eight. Sometimes we plow just skimming the ground, to kill the weeds; at other times twelve inches deep.

X Q. 27. The pole of the plow is connected with the neck-yoke, I suppose?

A. Yes, sir.

X Q. 28 When the plows are out of the ground, does their weight press the pole up against the neck-yoke?

A. No, sir; because the lead bars balance it.

X Q. 29. If I understand you, the machine is so balanced that, when the plows are up, the weight rests upon the axles in the hubs of the wheels?

A. No, for this reason: In practice we have found it necessary to throw a considerable heft on the frame of the plow when in operation, and the pole is used as a counterbalance against that heft when the plow is not in operation.

X Q. 30. My previous question referred to a case when the plow was not in operation, and the plows had been lifted up, and I wanted to know if, in that case, the machine was substantially balanced, so that the weight rested on the hubs of the wheels.

A. The weight rests substantially on the wheels.

X Q 31. Does lowering the plows move the center of gravity backward?

A Yes, for the reason that the crank-axle forms the lever which raises the plow, and the further it goes away from its axle of gravity, the more change is made.

X Q. 32. In operation in the field, how is the plow lifted, suddenly or gradually?

A. That wholly lays in the power of the operator. The spring is so adjusted to hold the balance of the plow in such a manner that he can operate it to move it swiftly or slowly.

X Q. 33. There is no provision, is there, in your plow for changing the elevation of the plow points without a corresponding and equal change in the entire plow?

A. No, for this reason: Practice and experience has proved to us, that the best manner is to raise the plow as near perpendicular as possible. In my patent of 1866, I patented a device where the plows were lifted, either heel or point, as suited the operator; but in practice I found it not so good as to raise the plow bodily.

Recess until two o'clock P. M.

Two o'clock P. M.

Met pursuant to adjournment. Present as before.

X Q. 34. How do you fix the time of your sale of the gang-plow you have brought here, to Edward Bent?

A. From an old book. I use it partly for a scrap-book.

X Q. 35. Have you any recollection of it independent of the book?

A. I delivered it to Mr. Bent. From delivering it to him and furnishing him extras during his life-time, I know that I sold him.

X Q 36. How do you know that McKinney bought it at an administrator's sale?

A. By general information, and furnishing McKinney extras for it.

X Q. 37. Prior to 1879, did you sell as many of these plows, on an average, as subsequent to then?

A. At first they were slow. I furnished about as many about 1879 as at any time.

X Q. 38. Is the lever which is used in raising and lowering the plows locked when the plows are in operation?

A. Not necessarily. It is convenient to do so, but we have used them by allowing the lever to come back to a stop.

Re-Direct Examination by L. L. Bond, Esq.

R-d. Q. 39. In your answer to cross-question 29, you say: "We have found it necessary to throw a considerable heft on the frame of the plow when in operation," etc. State what you mean by that, and whether the extra tension of the spring when the plow is in operation, or down, has anything to do with it.

A. What I mean by the extra heft is the arrangement of the parts. I didn't mean any additional heft. As the crank leaves its center of gravity, the power to lift the plow is increased by the tension of the spring. When the axle is changed from a horizontal position to an upright, the tension of the spring is not so great, but it causes an increased effect on the parts of the frame; that is to say, it increases on the combination of the axle, lever and frame.

R-d. Q. 40. To what extent does the spring act on the plows when they are down in the ground?

A. It does not act at all. The spring is held in place by the gravity of the frame.

R-d. Q. 41. What effect would it have on the combination of the axle, lever and frame, if the beam was hinged to the axle?

A. It would lift it up behind the same as it would with a plow. I have had them that way.

R-d. Q. 42. How would it be if your spring was applied to a hinged cultivator beam of the arched axle form of cultivator, where the beam is hinged to the lower horizontal portion of the arched axle?

(Objected to as incompetent)

A. I can readily take the same spring that is on my plow and apply it to the cultivators that I have seen, in two or three hours, and have precisely the same result that the springs have that are now used on the cultivators.

R-d. Q. 43. What spring cultivators have you seen?

(Same objection.)

A. Those of Bradley Manufacturing Company, and the patent drawing of those made by, I suppose, the Eagle Company.

H. N. DALTON.

Subscribed and sworn to before me, this 5th day of July, 1888.

[SEAL] ALBERT H. ADAMS,
Notary Public.

The further taking of testimony is adjourned until further notice.

ALBERT H. ADAMS,
Notary Public.

STATE OF ILLINOIS, }
COUNTY OF COOK. } ss.

I, Albert H. Adams, a notary public in and for the county of Cook, in the State aforesaid, do hereby certify that the foregoing deposition of Henry N. Dalton was taken by and before me at the time and place therein specified, pursuant to agreement; that the parties to the said cause were present at the taking of the same, complainant by its counsel, Nathaniel French, Esq., and defendant by its counsel, L. L. Bond, Esq., as therein appears; that, before deposing, the said Henry N. Dalton, was by me duly sworn to tell the truth, the whole truth, and nothing but the truth, in the cause wherein the Eagle Manufacturing Company is the complainant, and David Bradley Manufacturing Company is the defendant, which cause is now pending in the Circuit court of the United States for the Northern district of Illinois; that his said deposition was reduced to writing by me from his statements, and the same duly subscribed and sworn to by him, as therein appears.

And I do further certify that I am neither attorney nor of counsel for any of the parties in said deposition or caption named, and am in nowise interested in the result of said cause.

In testimony whereof, I have hereunto set my hand and affixed my notarial seal this 5th day of July, A. D., 1888.

[SEAL.]

ALBERT H. ADAMS,
Notary Public.

UNITED STATES CIRCUIT COURT,
NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company.
} *In Equity.*

To Nathaniel French, Esq., Solicitor for Complainant:

Please take notice that testimony on the part of the defendant, to be used upon the hearing of the above-entitled cause, will be taken on Tuesday, February 5, 1889, at the office of West & Bond, Rooms 50-54, No. 204 Dearborn street, Chicago, Illinois, before Harry T. Jones, a notary public, or other competent officer. The testimony will continue from day to day until completed.

You are invited to attend and cross-examine.

WEST & BOND,
Solicitors for Defendant.

CHICAGO, ILL., January 28, 1889.

Service of above notice acknowledged by copy, this 29th day of January, 1889, and consent is given to the taking of testimony under the same.

NATH'L FRENCH,
Solicitor for Complainant.

UNITED STATES CIRCUIT COURT,
NORTHERN DISTRICT OF ILLINOIS.

The Eagle Manufacturing Company,
v.
The David Bradley Manufacturing Company. } *In Equity.*

At Chicago, Illinois, this 5th day of February, 1889, before Harry T. Jones, Notary Public.

Present: N. FRENCH, Esq., for complainant; L. L. BOND, Esq., for defendant.

At 10 o'clock in the forenoon, pursuant to the notice hereto attached, the parties to the said cause, by their counsel as above, met at the office of Messrs. West & Bond, Rooms 50-54, No. 204 Dearborn street, Chicago, Illinois, whereupon the following proceedings were had:

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Counsel for defendant offers in evidence printed copies of the specifications and drawings of letters patent of the United States, as follows, to-wit:

No. 132,910, dated November 12, 1872, granted and issued to C. Kewin, for gang-plows, and the same is marked "Defendant's Exhibit Kewin Patent, H. T. J., N. P."

No. 190,816, dated May 15, 1877, granted and issued to W. P. Brown, for coupling for cultivators, and the same is marked "Defendant's Exhibit Brown Patent, H. T. J., N. P."

No. 200,955, dated March 5, 1878, granted and issued to T. J. Ward, for cultivators, and the same is marked "Defendant's Exhibit Ward Patent, H. T. J., N. P."

No. 222,767, dated December 16, 1879, granted and issued to E. A. Wright, for wheel-cultivators, and the same is marked "Defendant's Exhibit Wright 1879 Patent, H. T. J., N. P."

No. 243,123, dated June 21, 1881, granted to Charles A. Hague, assignor, etc , for cultivator, and the same is marked "Defendant's Exhibit Hague Patent, H. T. J., N. P."

No. 270,629, dated January 16, 1883, granted to Byron C. Bradley, assignor, etc., for cultivator, and the same is marked "Defendant's Exhibit Bradley Patent, H. T. J., N. P."

No. 61,649, dated January 29, 1867, granted to A. H. Allison, for cultivators, and the same is marked "Defendant's Exhibit Allison Original Patent, H. T. J., N. P."

R No. 9,085, dated February 17, 1880, granted to A. H. Allison, assignor to the Eagle Manufacturing Company, for cultivator, and the same is marked "Defendant's Exhibit Allison Reissue Patent, H. T. J., N. P."

No. 73,972, dated February 4, 1868, granted to Martin Hayden, for seeding-cultivator, and the same is marked "Defendant's Exhibit Hayden Patent, H. T. J., N. P."

No. 26,606, dated December 27, 1859, granted to Peter Monahan, for cultivator, and the same is marked "Defendant's Exhibit Monahan Patent, H. T. J., N. P."

No. 128,701, dated July 9, 1872, granted to W. P. Brown, for cultivator, and the same is marked "Defendant's Exhibit Brown 1872 Patent, H. T J., N. P."

No. 154,666, dated September 1, 1874, granted to Marquis L. Gorham, for cultivator, and the same is marked "Defendant's Exhibit Gorham Patent, H. T. J., N. P."

No. 66,927, dated July 16, 1867, granted to Alvah Wiswall, for spring hinge, and the same is marked "Defendant's Exhibit Wiswall Patent, H. T. J., N. P."

No. 67,525, dated August 6, 1867, granted to Henry S Frost, for door-spring, and the same is marked "Defendant's Exhibit Frost Patent, H. T. J., N. P."

No. 116,644, dated July 4, 1871, granted to M. F. Taber, for door and gate spring, and the same is marked "Defendant's Exhibit Taber Patent, H. T. J., N. P."

No. 31,702, dated March 19, 1861, granted to John Cox and John A. Throp, for cultivators, and the same is marked "Defendant's Exhibit Cox and Throp Patent, H T. J., N. P."

No. 6,037, dated January 16, 1849, granted to D. B. Rogers, for wheel cultivator, and the same is marked "Defendant's Exhibit Rogers Patent, H. T. J., N. P."

Deposition of William S. Bates.

William S. Bates, a witness produced on behalf of defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Q. 1. What is your name, age, residence and occupation?

Deposition of William S. Bates.

A. William S. Bates; age, 37; residence, Chicago; occupation, mechanical engineer and solicitor of patents.

Q. 2. What opportunities have you had for becoming familiar with patents, patented improvements and mechanics generally; and what opportunities have you had for becoming familiar with cultivators generally and spring cultivators in particular?

A. For the last sixteen years I have had more or less to do with patents and patented improvements, in preparing and prosecuting applications for patents and otherwise. The practice of my profession brings me daily in contact with mechanical appliances of one sort or another, and I have to examine the same both critically and analytically. During the last eleven years I have been frequently called upon as a mechanical expert in patent cases to testify, and I have so testified some hundreds of times. I have so testified in a number of suits involving cultivators, and in several suits involving spring cultivators.

Q. 3. Have you examined, and are you familiar with, the complainant's Wright patent of June 7, 1881, No. 242,497?

A. I have examined and am familiar with it. I have testified in regard to this patent in two previous suits.

Q. 4. What improvement in cultivators do you find therein shown and described as claimed in the claims numbered 1, 2, 3 and 4 of said patent? In your answer also state what differences, if any, you find between the improvement claimed in each of said four claims.

A. As set forth in the first and second claims, the improvement consists in the combination of a lifting-spring and a vertically moving beam. Simply those two elements. Those two claims are for the same combination. The third claim is for the combination of these same two elements and a wheeled frame, and the fourth claim is for a combination of the vertically moving beam, the lifting-spring and a shifting or changing bearing or a fulcrum. There are other words in each of the claims descriptive of the results, but no other words descriptive of the instrumentalities.

The structure set forth in the specification and drawings is a peculiar one. It consists of a cultivator-beam, a cultivator-frame, to which it is hinged, and a spring with a long curved arm, attached to one member and pressing against a friction-roller on the other member in such a way as to have the action of an inclined plane, and thereby exert a lifting effect on the beam. The specification states that this lifting action is to increase as the beam rises, but it is not apparent from the drawings whether it does so or not, nor does the specification describe how it shall be made to do so. The specification is worded in broad and ambiguous terms, apparently with the idea of making it cover this result; but, as this result was old in the art, I understand that the claims are limited to the combination of the beam, and the particular spring shown and described.

Q. 5. State whether or not you find the machines or the springs to be of any special or peculiar form, as set forth in the specification, and, if you say you do not, give your reasons for the opinion?

A. The specification does not specify any particular kind of a spring or any particular kind of a machine to which it is to be applied. The specification states that the invention relates "to that class of machines, generally wheeled, which have vertically-swinging beams or drag-bars to carry the shovels or plow-points;" also "while the invention is designed more particularly for use in connection with wheeled cultivators, it is obvious that it may be applied to various other machines containing substantially the same requirements." The first and second claims use the word "culti-

vator," but the other claims are silent as to the character of the machine. The spring is occasionally referred to as the spring shown in the drawings; beyond this there is no particular description of it. The specification harps a good deal on the result of its action. In one place the specification states that "any spring" which has the particular result sought is included.

Q. 6. Have you examined the patents, and do you understand the machines therein described, as shown and described in the following patents exhibited by the defendant, to-wit: Kewin patent, Brown patent, Ward patent, Wright 1879 patent, Allison original patent, Allison reissue patent, Hayden patent, Monaghan patent, Brown 1872 patent, Gorham patent, Wiswall patent, Frost patent, Taber patent, Cox and Throp patent and Rogers patent?

A. I have examined all of them. I believe I understand them?

Q. 7. Please state what machines you find shown and described in the several exhibits mentioned, and whether or not you find therein, or in either of said patents, the same or substantially the same improvements as that described and claimed in and by the complainant's Wright patent; and, also, whether or not you find shown and described in either of said patents any improvements or devices limiting, or tending to limit, the complainant's machine, and the claims of the patent, to substantially the structure therein shown and described, and give your reasons for any opinion or opinions which you may express?

A. Several of the patents referred to contain combination springs and beams having the same result as that set forth in the Wright patent, and they limit the claims of the patent in this way: that, if the claims are not limited, they will cover these older devices. I will now consider these patents separately.

The Brown patent of 1877 shows and describes a cultivator whose plows are attached to the frame by the means of an adjustable pipe box. The pipe box has an arm on it, and a spring secured to the frame acts upon this arm, so as to exert a lifting effect upon the beams. In the position shown in the drawing, the spring does not exert an increasing effect as the beams rise, but it is a mere matter of adjustment to make it do so. If the pipe box be adjusted so as to bring its arm, say into the position of the dotted line in Fig. 2 of Brown's drawing, or a little further back, the effect of the spring upon the beam would be an increasing effect as the beam rose. The pipe box is capable of this adjust-

ment, and is used for the express purpose of permitting adjustment. When thus adjusted, the Brown device is within the terms of the complainant's claims, except, possibly, the fourth, which specifies shifting-bearing or fulcrum. It is worthy of notice that, while Fig. 2 of the Brown patent shows the pipe box arm adjusted to a position in front of the arched axle, Fig. 1 shows it about in line with the axle, and there is no reason to suppose that it is not frequently set still further back.

The Wright patent of 1879 shows identically the same structure as the patent sued on, and the same result is described in the specification.

The Gorham patent of 1874 shows and describes a cultivator with a vertically moving beam hinged to a wheeled frame, and provided with a lifting-spring. The spring is a coiled compression-spring, and is placed upon a rod, one end of which is fastened to the beam. The rod extends forward and upward through an eye on the frame, and the spring bears against the eye at one end and against a nut or shoulder on the rod at the other end. The effect of this construction is that, as the beam rises, the spring has a more direct pull on it and consequently has an increasing effect. The Gorham patent, therefore, secures the result sought to be patented by the complainant's patent, and is within that patent, unless it be limited to its particular construction.

The Brown patent of 1872 shows several ways of applying lifting-springs to assist in lifting cultivator beams.

The Kewin patent of 1872 shows and describes an arrangement of a weight to assist in lifting the plows in a gang-plow.

The Ward patent of 1878 shows and describes a cultivator whose vertically moving beams are acted upon by a weight in such manner that the lifting effect increases as the beams rise. The weight is attached to the end of a lever which is connected to the beam and projects upward and forward, so that the weight is almost directly over the axle when the shovels are in the ground. As the beams are raised, the weight, of course, moves in the arc of a circle, and its leverage increases, and consequently its effect upon the beam increases. If a weight is an equivalent for a spring, this Ward machine is within the complainant's patent, unless that patent be limited to the particular structure shown in it.

The Allison patent of 1867, and the Allison reissue of 1880 both show and describe a cultivator in which the beams are supported by a frame. In the Allison reissue, it is worthy of remark, that the claims cover in terms the same combination of mechanism specified in the

claims of the Wright patent sued on The only difference is that the Allison claims do not specify the result mentioned in the Wright, namely, having the spring act with an increased effect as the beams rise.

The Hayden patent of 1868 shows and describes a cultivator in which the beams are supported by a spring with a changeable or shifting bearing on which the spring slides as the beams are raised. As shown and described, the machine is a riding straddle-row cultivator, but it might be made a walking cultivator by simply adding handles to the beam. The springs are curved very much as the Wright springs are, and, if properly adjusted, would have an increased lifting effect as the beams rise, due partly to the shifting bearing, and to the shortening of the spring, just as is the case in the Wright patent.

The Monaghan patent of 1859 shows and describes a cotton cultivator provided with a curved spring for supporting and raising the beams. This spring is attached to the thills or frame and has a changeable or shifting bearing on the beam like the modification shown in figures 3 and 5 of the Wright patent sued on Its operation is also the same as that of the Wright, the shifting bearing causing the spring to shorten and act with increased effect as the beams rise.

The Wiswall patent of 1867 shows the Wright spring and shifting bearing and friction-roller applied to a door. It has the same form of spring as the Wright, and operates in the same way; that is, it acts with increasing effect as the door moves from the dead point.

The Frost patent of 1867 also shows a door-spring. In it a curved bar has a moving bearing on the door.

The Taber patent of 1871 shows a coiled spring with a radius bar connected to a door by a chain. It acts with an increasing effect as the door closes

The Cox and Throp patent of 1861 and the Rogers patent of 1849 both show cultivators in which the plows are raised and lowered by a crank-axle Cox and Throp has a three-cornered frame whose sides constitute diverging beams, and Rogers has a rectangular frame.

Q. 8. Have you examined the "Defendant's Exhibit Dalton Patent," and have you seen and examined the "Defendant's Exhibit Dalton Old Plow," and do you understand the construction and operation of the plow shown in the patent, and of the exhibited plow?

A. I have examined both said exhibits, and believe I understand them both.

Q. 9. Please state the structure and operation of the Dalton plow as shown in the patent, and as constructed in the exhibited Dalton plow, and state wherein, if at all, the said exhibits contain the same, or the substance, of the combinations of the first four claims of the complainant's patent, and give your reasons for any opinion or opinions you may express.

A. Both said exhibits have a spring to sustain and raise the plows or shovels, and this spring acts with increasing effect as the plows rise. In the Dalton patent, the machine is a cultivator with a square frame somewhat similar to the Rogers This frame is hung upon the arched portion of an arched axle; a coiled spring is applied to the axle and frame, and has one end attached to the axle, and the other end to the frame, and tends to hold the axle in an upright position when the plow is elevated. As the axle is turned with its arch in a horizontal position, the leverage of the weight increases, and of the spring decreases, and, as the arch is turned from its horizontal to its upright position, or dead point, the leverage and effect of the spring increase while raising the plows. The axle is provided with a lever extending forward when the plows are out of the ground, and upward when the plows are in the ground, and the machine is apparently a riding cultivator If the position of the lever were changed ninety degrees, so as to extend backward when the plows are in the ground, the machine would be a very convenient walking cultivator. The exhibit Dalton plow is a machine with diverging beams mounted on an arched axle, so that, when the arch is turned upright, the plows are out of the ground, and when it is turned down, they are in the ground. It has a coiled spring attached to the axle and beams whose tendency is to turn the axle up. This effect is very slight when the plows are in the ground, but increases as they rise. This machine has plow-shares on the standards, but they might be removed and cultivator shovels attached. By applying handles to the beams, the machine could also be used as a walking cultivator. The Dalton machine is within the first three claims of the Wright pateut sued on, unless those claims are limited to the particular form of spring shown in the Wright drawings. The same is true of the machine shown in the Dalton patent.

By consent of counsel the further taking of testimony is adjourned until to-morrow, February 6, 1889, ten o'clock in the forenoon.

Wednesday, February 6, 1889; ten o'clock in the forenoon. Met pursuant to adjournment. Present as before, and George H. Christy; for complainant.

Q. 10 You have spoken of the machine of the Dalton patent as a cultivator. Why do you give it that name?

A. I called it a cultivator because I understand it to be one. It is termed a gang-plow in the patent, and that name was commonly given to cultivators at that date. The name is certainly appropriate, and just as applicable to a shovel-plow as to a share-plow.

Q. 11. Complainant's Wright patent recites, on page 2, commencing with line 125, in substance, that it is obvious that the improvement of the patent "may be applied to various other machines containing substantially the same requirements." Please state what the requirements of the machine are in relation to the spring attachment, and what other machines contain substantially the same requirements.

A. The requirements stated in the specification are, to render the operations of the machine easier and less laborious to the attendant; to enable the attendant to lift the beams easily above an operative position with the shovels clear of the ground, in turning the machine and in carrying it to and from the field. The other machines containing substantially the same requirements, are seeders, harrows, scarifiers, sulky-plows, etc., including gang-plows; either cultivator gangs or others.

Q. 12. In your answer to question 4, you spoke of the structure set forth in the specification and drawings of the Wright patent as peculiar; to what extent is the machine shown in Fig. 1 of said patent peculiar in its structure or special to the complainant's Wright patent?

A. The only peculiarity about it is in the form of the spring; all the rest of the machine was in common use at the time of the Wright invention. This is recognized in the specification, where it says, on page 1, line 95, of the machine shown in the drawings, "that shown in the drawings being the usual and well-known form of the ordinary double-shovel wheeled cultivator." The specification also recognizes that other forms of spring applied to raise the beams and hold them up were old.

Q. 13. State whether or not you find in the specification of the complainant's Wright patent a distinction between a spring acting with increasing force and a spring acting with increasing effect. In your answer, state what you find the patent to call for or specify in these respects.

A. The patent seems to call for a spring which acts with both increasing force and increasing effect. The specification says, in one place: "As the beam is elevated, the fixed end of the spring approaches the roller, and, consequently, as the operative portion of the spring is lessened in length, the spring acts with increased force and effect as the beam ascends." In other words, as the beam rises, the spring is shortened, and hence becomes stiffer, and has more force. Again, in speaking of the loss of tension of the spring as it swings upward, the specification says: "But this loss is more than compensated for by the shortening of the active portion of the spring." And hence it is that the lifting force or effect of the spring increases during the rise of the beam. Again, it says: "The roller or point of bearing approaches the fixed end or fulcrum of the spring as the beam rises, so that the spring acts with increasing power and also with increasing effect in elevating the beam."

Q. 14. Have you examined the wooden frame Dalton, marked "Defendant's Exhibit Dalton Machine," and if so, state what said machine is, and whether or not, in your opinion, it correctly represents the machine of the Dalton patent, so far as the machine is shown in the drawings of said patent, and whether or not, in your opinion, the parts added thereto are properly added within the terms of the Dalton specification.

A. The machine referred to is constructed according to the drawing of the Dalton patent, with the addition of shovels and standards and a pair of handles for use in walking. These parts are properly added to what is shown in the drawing. The lever shown in the drawing for turning up the axle is omitted, as the handles takes its place. These changes would require no invention, and, therefore, the machine is a legitimate Dalton machine, made according to the patent.

(The machine referred to offered in evidence is already marked "Defendant's Exhibit Dalton Machine.")

Q. 15. Have you examined the defendant's machine, and do you understand the construction and operation thereof?

A. I have examined it, and understand its construction and operation.

Q. 16. Please compare the defendant's machine with the machine shown and described in the complainant's Wright patent, and in respect to the combinations claimed in the first four claims of said patent; state whether or not you find embodied in the defendant's machine, in form or substance, the subject matter of the said four claims, and give your reasons for any opinion you may express.

A. I have made the comparison required. The defendant's machine does not embody, in either form or substance, the subject matter of the first four claims of the Wright patent sued on. My reasons for this conclusion are as follows:

The Wright, as has already been explained, relates to the application of a peculiarly constructed spring to an ordinary cultivator. This spring consists of a curved rod, with a coil at its fixed end, where it is attached to either the beam or the axle of a cultivator; the friction-roller is attached to the other of these two members, and the curved portion of the spring passes under it, and moves upon it as the beam rises. As a result of this arrangement the spring is shortened as the beam rises, and, hence, its force is increased, so that it acts with an increased effect upon the beam as the latter ascends. The first claim of the patent is for the combination of a vertically swinging beam, and the spring acting with this increasing force in a cultivator. The second claim is for the same thing for a wheeled cultivator. The third claim is for the same thing in combination with a wheeled frame, and the fourth claim is for the same two elements combined in the same way, and with the shifting and changing bearing.

Turning now to the defendant's machine, I find it to be an ordinay cultivator, with a lifting-spring, which, however, is of an entirely different form, and operates in a different way, from the Wright. In the defendant's machine, there is a small crank-arm or lever on the upright portion of the axle near its top. The end of this lever is connected with the beam by a link and chain. The lever is also connected with the free end of a C spring, which is fixed to the axle. The tendency of the spring is to hold the lever in an upright position; the tendency of the beam is to hold it in a horizontal position. This being the structure, when the beam is down the crank-arm is at its dead point with respect to the spring, and at its right-angular position with respect to the beam; and when the beam is up, the crank-arm is at its right-angular position with respect to the spring, and at its dead point with respect to the beam. Hence, as the beam is raised from its downward position, the spring acts with increasing leverage, and the beam with decreasing leverage, and *vice versa*. There is no shifting or changing of bearing in this machine. The spring is not shortened in the operation of the machine, but remains always at the same length, and the loss of tension in the spring as the beam rises is not compensated for by any shortening or stiffening of the spring, as it is in the Wright

patent. The springs in these two machines are of entirely different form, one being an ordinary C spring, and the other a curved rod; their operation is different, one acting direct, by moving along a friction roller, and the other acting upon a crank. One acts with increased force by the shortening of its active portion, while the other acts with a constantly decreasing force, compensated for by the turning of the crank-arm and the decreasing leverage in the beam. For these reasons, I say that the defendant's machine does not contain the inventions claimed in the Wright patent sued on.

Q 17. You have already stated the principle upon which the spring in a machine of the complainant's Wright patent acts, and also the operation of the spring action in the defendant's machine. Please restate the principle upon which the springs of the two machines act, and whether or not the spring action of either of them operates upon the principle of the Dalton spring, and state your reasons.

A. The Wright spring acts by a shortening of the active portion of the spring, thus giving the spring increased force as the beams rise, the weight of the beams being carried by the spring when up as well as when down. In the defendant's machine the operation is that of a crank, and the weight of the beams is gradually taken off the spring and transferred to the axle by the turning of the crank-arm into its upright position. In this the defendant's machine is like the Dalton, which is also a crank-arm machine, and in which the weight of the beams is gradually transferred from the spring to the axle as the crank assumes its upright position and raises the beam.

By consent of counsel the further taking of testimony is adjourned until to-morrow, February 7, 1889, at ten o'clock in the forenoon.

Thursday, February 7, 1889, ten o'clock in the forenoon. Met pursuant to adjournment; present as before.

Cross-Examination, by N. French, Esq.

X Q. 18. In your direct examination you stated, in substance, that you had previously testified in two suits based upon this patent here in suit. Do you recall the names of the cases and in what court they were pending?

A. One was the same complainant against David Bradley & Company. The other was the same complainant against the Moline, Milburn & Stoddard Company, both in the Iowa court. I don't know what district.

X Q. 19. In both of those cases you testified in behalf of the defendants, did you not?

A. I did.

X Q. 20. By referring to your testimony in those cases, I find that you were asked in each case the following question on your direct examination: "Q. 10. In the Wright specification, commencing with line 120, page 2, it is stated that the radius-bar, or link, may be used as a substitute for a curved spring and roller. State what you understand this modification to cover, what a technical radius-bar is, and how it can be applied to a machine shown in the Wright patent as a substitute for the spring and roller." To this question you gave the following answer:

"I have made a sketch showing how a radius-bar might be substituted in the Wright patent. It is the only way in which a radius-bar could be used or substituted in the Wright machine. Technically, a radius-bar is an oscillating bar in a steam engine which guides the end of the piston-rod. Its sole function is to guide a reciprocating member. By turning my sketch over on its side, so that the axle becomes the beam and the beam becomes the axle, we have a modified form in which the spring is attached to the axle instead of the beam.

"The operation of this radius-bar in the Wright machine would be very much like that of a spoke in the roller, if the roller were made with spokes instead of solid. It would have an increasing lift; the radius-bar would simply take the place, as a guide for the end of the spring, that the roller performs in the patent." Was your answer to that question true? Please answer, yes or no.

A. Yes; I believe it is.

X Q. 21. I call your attention to the sketch already in evidence in this case, marked "Bates' Sketch of Radius-Bar Modification," and wish you to tell me whether it is a correct copy of the sketch you made and produced in connection with the answer already referred to.

A. It is.

X Q. 22. Will you please state how an inclined plane can, in and of itself, exert a lifting effect on a weight?

A. If the plane is forced under the weight it will lift it.

X Q. 23. Then, some additional force must be applied, must there, in order to make an inclined plane operate as a lifting mechanism?

A. Certainly.

X Q. 24. Please state what force, if any, you find from the Wright patent, is used or intended to be used, to make what you are pleased to call an inclined plane, so act as to "exert a lifting effect on the beam?"

A. The force of the spring.

X Q. 25. Is there anything, which you would call an inclined plane, in the radius-bar drawing you made, and which is marked "Bates' Sketch of Radius-Bar Modification?"

A. No, sir; there isn't.

WM. S. BATES.

Subscribed and sworn to before me, }
this 7th day of February, 1889. }

[SEAL.] HARRY T. JONES,
Notary Public.

Deposition of John F. Packer.

John F. Packer, a witness produced on behalf of defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Deposition of John F. Packer.

Q. 1. State your name, age, residence and occupation?

A. John F. Packer; LaGrange, Cook county, Illinois; 37 years of age; master mechanic for David Bradley Manufacturing Company, Chicago.

Q. 2. What opportunities have you had for becoming familiar with the construction and operation of agricultural implements generally and spring cultivators in particular?

A. For the past nineteen years I have been directly connected with their manufacture, and have done some inventing in all classes of agricultural implements. For the past six years I have been directly connected with the David Bradley Manufacturing Company in the manufacture of their machines. I have invented and patented two different applications of springs for cultivators. Their line includes spring cultivators.

Q. 3. Have you read the complainant's Wright patent, and do you understand the construction and operation of the cultivator therein shown and described?

A. I have, and I think I fully understand the construction and operation thereof.

Q. 4. Please explain, in your own way, the differences between the construction and operation of the machine shown and described in the Wright patent and the defendant's machine, in respect to the use of springs, their operation, effect and results?

A. The Wright patent, as granted, consists, as I understand it, of three elements; in the first and second claims, of two elements—the drag-bar or beam and a lifting spring; in the third, of three elements—the wheeled frame, drag-bar or beam and lifting spring. In the fourth there are three, a beam, a lifting spring, and, as it is termed by the applicant, a changing or shifting bearing or fulcrum. As I understand the operation and construction, the spring is of peculiar shape, with an extension of the coil passing under a friction roller, whereby, in raising the beam, the shape in combination with the tension of the spring, increases the lifting force as the beam is raised, the operation of the spring being direct on the beam.

On the other hand, the defendant's spring and connections are composed of a beam, a lever pivotally connected to the frame and loosely connected to one end of a U-shaped spring, the other end of the spring being rigidly attached to the frame-work of the cultivator. The beam is directly attached by means of a connection to the lever. The spring is the motive power for the lever, and has no connection with the beam whatever, except that it operates a lever for the purpose of raising the beam to an inoperative position.

Q. 5. State whether, in your opinion, the Wright cultivator operates upon the same or on a different principle, and, if you say it is different, explain the difference in operation?

A. I consider it entirely different, in that the Wright spring operates directly on the beam, while our spring is merely motive power for a lever to operate the beam, our spring acting the same as the operator would by taking hold of the lever to raise and lower the beam, were he mounted on the machine, in a riding cultivator.

Q. 6. By whom was the "Defendant's Exhibit Dalton Machine" made?

A. By myself.

Q. 7. From what did you make it, and what instruction, if any, in regard to it, did you have?

A. From a copy of the specification of the Dalton Letters Patent. I had no instructions otherwise.

Q. 8. Who made the machine "Defendant's Exhibit Walking Cultivator with Dalton Spring?"

A. I did; or caused it to be made, superintending the construction of it.

Q. 9. For what purpose, or to what end, did you make that machine?

(Foregoing question is objected to by the complainant's counsel, for the reason that it does not appertain to any matter in this cause.)

A. I made the machine for the purpose of applying the Dalton spring in two different applications; to a swinging drag-bar beam and a wheeled cultivator frame.

Q. 10. Since making the Dalton machines referred to by you, have you seen the Dalton iron plow marked "Defendant's Exhibit Dalton Old Plow?"

A. I have.

Q. 11. Have you manipulated or operated that machine since it was produced in Chicago?

A. I have operated the spring and the levers.

Q. 12. State what the effect of the spring was, with reference to its action in lifting the plows. Say what it is?

A. The effect of the spring is to retain the plow in an inoperative position after it is raised, by means of changing the crank-axle. That is, the spring rotates the crank-axle from a horizontal to a perpendicular position. In a perpendicular position the weight of the plow is almost entirely on the axle. It requires very little strength of spring to hold it in that position. Of course, the force of the spring is decreased as the beam raises, and increased as the beam is lowered to its work.

Q. 13. How is it about the effect of the spring?

A. The effect of the spring as the beam raises has a tendency to hold the beam, or does hold the beam, in a raised position when in an elevated position, and will not hold the beam in its operative position.

Q. 14. You stated that the spring loses tension or force as the beam rises. How is it with regard to an increased effect as the beam rises?

A. Well, the effect is to hold the beam with less force from the spring in an elevated position.

Q. 15. That is when it is at its limit. How is it between its upper and lower limit?

A. Well, it increases as the beam rises from the horizontal to the perpendicular or elevated position.

Cross-Examination by N. French, Esq.

X Q. 16. Where did you try to manipulate the Dalton Old Plow; in the field or in some building?

A. At our warehouse here in the city; also in the court-room.

X Q. 17. If I understand you correctly, when the crank-axle inclines backward in a substantially horizontal position, the spring will not elevate the plow. Now, please tell me what, if any, provision there is in the machine for lifting the plows?

A. A lever.

X Q. 18. To what is the lever connected?

A. To the crank-axle.

X Q. 19. The object of the lever is to elevate the plows, is it not?

A. To assist.

X Q. 20. You mean to say that other aid is neccessary in order to lift the plows?

A. No, sir; I do not mean to say so.

X Q. 21. Then, the object of it is to elevate the plows?

A. That is, in this instance; not in all plows. I stick to my answer "to assist" in that plow.

X Q. 22. Is there any other object in having the lever there than as regards lifting the plow?

A. Yes.

X Q. 23. Please state what it is.

A. For locking the plows a certain depth in the ground.

X Q. 24. How is the lever to be operated?

A. By the operator.

X Q. 25. Sitting on the machine, I suppose?

A. Either way; sitting or walking.

X Q. 26. Will the spring which you have described in the plow, which you say you have seen, elevate the plow without the aid of the lever when the plow is down in the operative position?

A. It will not.

X Q. 27. Could you lift the plow by means of the lever without the aid of the spring?

A. That would depend upon how strong I was. I do not know how heavy the plow is. It would make a great difference.

X Q. 28. You are unable to state, then?

A. I am unable to state.

X Q. 29. If the operator was strong enough, he could do it?

A. Certainly; yes, sir.

X Q. 30. Then, the lever is an operative device by which the plows can be raised, wholly irrespective of the spring?

A. With the proper amount of force, yes.

X Q. 31. About where is the center of gravity, if you know, of the frame to which the plows are attached? Where is it with respect to its fastenings to the crank-axle? In this question I include the tongue as part of the frame. Of course that has some weight.

A. Well, I do not know as I have noticed that. I should presume it would be pretty near balanced.

X Q. 32. By this you mean balanced upon its bearings upon the crank-axle, do you not?

A. When the plow is raised.

X Q. 33. Then, if I understand you, when the plow is raised the machine is substantially balanced, so that the weight is carried on the wheels?

A. I do not think the weight is on the horses' necks. My judgment would be that it was back of the center of the wheels. The heft was in the rear of the center of the axle. What I mean by axle is the part that goes through the wheel-hub. I should presume, if there was any difference in the weight, it would be in the rear of the axle when the plow is raised.

X Q. 34. My question asked you whether I was to understand from your previous answers that, in your opinion, the frame was substantially balanced when the plows were in the elevated position. Please state whether that is your opinion.

A. My understanding of "substantially balanced" would be, it might vary a trifle either way. My judgment would be, that if there was any variation, it would be in the rear.

X Q. 35. When the plows are in the ground in the operative position, the weight of the plows and frame more than overcomes the lifting effect of the spring, does it not?

A. When the plows are in the operative position, it does.

X Q. 36. As the frame and plows are lifted up and approach a line drawn through the axles of the wheels, the weight is carried more and more on the wheels, is it not?

A. I do not understand your question, sir—that is, the way you ask it. I might consider it two or three different ways.

X Q. 37. You have already testified that, in your opinion, when the plows are in the elevated position, the weight of the frame and plows rests upon the wheels. Where, with reference to the axles of the wheels, does the weight rest when the plows are down in the ground in the operative position?

A. Why, it rests on the ground.

X Q. 38. As the plows are raised from the operative to the inoperative position, the weight is transferred from the ground to the wheels, is it not?

A. Yes, sir.

X Q. 39. That transfer is gradual, is it not, being proportionate to the movement of the plows from the operative to the inoperative position?

A. No.

X Q. 40. If not gradual, please explain how the change takes place.

A. The instant the operator takes hold of the lever he throws the weight of the plow onto the axle at the instant he begins to raise the lever. He relieves the ground of all weight from the plows.

X Q. 41. The transfer of weight to which I allude was a transfer which commenced when the weight was on the ground, and ended when the weight was carried by the wheels so as to be, as you have already stated, substantially balanced over the wheels. With this explanation, please answer the question before asked you, whether the transfer of the weight is not gradual.

A. No, it is not.

X Q. 42. How is the transfer of the weight from the ground to a position, so as to be substantially balanced over the wheels, produced?

A. To the best of my knowledge, there is no such transfer.

X Q. 43. Am I to understand by that, that you think the weight does not rest substantially over the wheels when the plows are up?

A. You are to understand by that, that the weight is never all transferred to the ground; that there is always a portion of the weight at the other side of the axle, to balance a certain amount of weight that is still on the wheels, caused to be there by the action of the spring holding the crank-axle to the ground. Now, the transfer of what weight is necessary to rest on the ground to keep the plow from going in, or what friction there might be from the bottom of the plow running on the bottom of the furrow, relieves the spring of a certain strain that it would have, provided there was no ground for the plows to rest on, and the wheels rested at the same point that they do when the plow is plowing. In other words, were it not for the resistance of the earth or the lever in the ratchet to prevent the plow from going deeper, the weight of the plow would carry the crank-axle above a horizontal line drawn through its attachment to the under side of the frame. Therefore I say that the weight is balanced to a certain extent while the plow is in an operative position. The ground takes its proportion, the spring its proportion, the lever its proportion, and the neck-yoke its proportion. Now, what I wish to be understood, in relation to transfer, is simply that, the instant the operator takes hold of the lever, and begins to raise it, he that instant transfers the weight that is resting on the ground to the crank-axle.

Re-Direct Examination, by L. L. Bond, Esq.

R-d. Q. 44. How or by what means is the spring put into action in a cultivator like defendant's, or one like that shown in complainant's Wright patent?

A. By the use of the handle on the beam by the operator.

R-d. Q. 45. When the shovels are out of the ground in either of these cultivators, how or by what means is the weight of the beams, with their shovels, supported or carried, when the machine is moving?

A. The wheels.

JOHN F. PACKER.

Subscribed and sworn to before me, this 7th day of February, 1889.

[SEAL] HARRY T. JONES,
Notary Public.

By consent of counsel, the further taking of testimony is adjourned until to-morrow, February 8, 1889, ten o'clock in the forenoon.

Friday, February 8, 1889; ten o'clock in the forenoon; met pursuant to adjournment; present as before.

Deposition of Charles A. Hague.

Charles A. Hague, a witness produced on behalf of defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Deposition of Charles A. Hague.

Q. 1. What is your name, age, residence and occupation.

A. Charles A. Hague; age, 39; residence, Hackensack, N. J.; business, New York City; occupation, mechanical engineer.

Q. 2. In whose service and employ have you been since 1875?

A. In 1875 I was in business for myself as mechanical engineer and draftsman in Chicago, Illinois. In the latter part of that year I went to work for the Frank Douglas Machinery Company, 253 South Canal street, Chicago. Later in the summer of 1876 I went to work for the Furst & Bradley Manufacturing Company as master mechanic; that position gradually merging into the one of assistant superintendent. January 1, 1884, I left the Furst & Bradley Manufacturing Company and went to work for E. P. Allis & Company as a mechanical engineer and salesman of machinery. February 11, 1886, I left E. P. Allis & Company and went to work for the George F. Blake Manufacturing Company, of Boston, having headquarters in New York, in the same general capacity as with E. P. Allis & Company, of Milwaukee, Wisconsion. January 1, 1888, I left George F. Blake Manufacturing Company and went to work for Henry R. Worthington, 145 Broadway, New York, in the capacity of mechanical engineer and contract agent in connection with pumping machinery for public water supply; and am still engaged with the latter firm.

Q. 3. During the time you were with the Furst & Bradley Manufacturing Company, did you make any improvements in cultivators; if, so, state generally what such improvements were in respect to the use of springs?

(Complainant's counsel objects to this and all other like questions, or all questions going to any alleged prior construction or use, for the reason that the same comes too late in the history or line of litigaiion under the patents here sued on, as between the parties to this suit—either actually such or parties in interest—and, also, because the defendants are estopped by their past actions and previous conduct from interposing any such defense; and in order not to encumber the record, this objection is entered once for all.)

A. As already stated, I engaged with the Furst & Bradley Manufacturing Company late in the summer of 1876, and that fall my attention was called to a device which the firm were about to apply to their cultivators, and consisting of a chain to support the beams of a cultivator, the lower ends of the chains being fastened to the beams, and the upper ends of the chains being allowed to travel on horizontal wrought-iron loops attached to the rear ends of the tongue. These chains were vertical, and their lengths were adjustable. In the spring of 1877 these chains were found to be objectionable when the cultivator shovels passed over uneven ground, and a spring was introduced between the chain and its support to afford elasticity and allow the shovels to follow the contour of the ground. This introduction of a spring directed the firm's attention, and, of course, my own, to the problem of applying springs to cultivators as made by the firm, although the general subject of springs on cultivators had commenced to be considered. During the spring and summer of 1877, Mr. B. C. Bradley, superintendent, and myself, to whom this experimenting fell, investigated and tried various forms of springs. In the summer of 1877, while so engaged, our attention was called by one of our traveling salesmen, Mr. F. W. Bicknell, to a device which he had invented, by means of which the cultivator beams could be supported and carried on the springs, and at the same time the cultivator beams could be automatically hung up by simply throwing the shovels out of and above the ground. This device consisted of a rod of iron suspended from a cross-bar near the arch of the cultivator, and free to swing in any direction. This bar or rod was made, throughout its length, of two different sizes, about equally devided, the lower half of its length being smaller than the upper half, and at the lower end of the rod was situated a coiled spring supported by a pin and a washer. The upper half of the rod, being larger than the lower half, was caught and held by a pinching device attached to the beam, this pinching device being unable to hold on to the lower half of the rod on account of that part of the rod being too small for it to grip. The operation was that the beam rode on the spring when at work, and

was held up when not at work by the pinching device automatically taking hold of the upper or larger part of the rod; when it was desired to lower the beams, the pinching device was tripped or disengaged by means of a wire which extended up to the ends of the handles of the cultivator and within easy reach of the operator. The difficulties of this device soon appeared, and consisted principally of the fact, that when the shovels jumped up and down in the ground, the pinching device was apt to catch on the large part of the rod and prevent the shovels falling back to their normal position. If the small part of the rod was extended upward to prevent this effect, we found that the handles of the cultivators had to be raised to an inconvenient height, in order that the beams might be hung up; however, we made and shipped some of these cultivators in the fall of 1877, and in the spring and summer of 1878.

During the summer of 1877, while we were experimenting with the various forms of springs for cultivators, it occurred to me that a spring might be constructed that would be double acting and automatic as far as holding up the beams was concerned. As a student of machinery and mechanics generally, I had always taken a great interest in all sorts of mechanical movements, and at that time was familiar with the action of springs used in this manner, having been engaged in selling a patent door spring in New York city in 1868. This door-spring consisted of a round steel rod secured to a socket attached to the door-casing over the door, and to the door was attached a small roller which traveled on the steel spring rod, and operated to close the door inside of a certain point of opening, and to throw the door open and hold it if it passed beyond a certain point. Late in the summer or in the fall of 1877 I completed a spring device in which a lever was interposed between a spring and the cultivator-beam in such a manner that the beam controlled the spring sufficiently to allow the shovels to stay down when the beams were at work, and the spring controlled the beam when the beams were thrown up, so that the beams of the cultivator were automatically held up by the increasing power of the spring over them. The action was that, when the beams were down and the shovels at work, the shovels could be easily kept in the ground, but, when the beams were thrown up beyond a certain point, the increased power of the spring automatically retained them there.

During this time, and afterward, there were numerous experiments continually going on in our factory with various forms of applications of springs to cultivators, and in 1878 and 1879 this differential spring device was finally brought down to the flat U-spring arrangement which the company were making when I left their employ.

Q 4. Please look at "Defendant's Exhibit Hague Patent," and state to what extent, if any, that patent shows any of the machines or improvements mentioned by you.

A. The Hague patent shown me, No. 243,123, is the patent issued for my invention as above specified, and containing some of the crudities of the original experiments. The patent shows the chain supporting the beam that had already been used. The patent also shows substantially the form of coupling between the beams and the cultivator axle in use by the firm at that time and which I improved later on, the chain being finally replaced by a rod of round iron running down nearly to the beam, and terminating in a short chain to provide for adjustment, the coupling, as shown in the patent, being entirely replaced by one of the new design which permitted the vertical adjustment of the front end of the beam without disturbing the tension of the spring.

Q. 5. When did you first make a machine or cultivator having attached thereto the spring-lifting device or arrangement shown in said Hague patent, and when were cultivators, as there shown, put upon the market?

A. The experiments of the summer of 1877 resulted in the production of a full-sized cultivator early in the fall of 1877—probably in September. The device was crude and complicated, and the difficulty in getting springs to stand the excessive strain imposed upon them by the leverage of the beam, made the utility of the apparatus sufficiently doubtful at that time to induce the firm to put forward Bicknell's spring and hang-up arrangement in the fall of 1877 and in the spring and summer of 1878, and it was not until the fatal difficulties of the Bicknell arrangement developed themselves that we commenced to think seriously of the differential spring device. Some of these machines were made as samples, and experimented with in the fall of 1878. The general features of the device and the durability of the spring having been brought to a point satisfactory to the firm, some samples were made during the winter of 1878-79 and shipped in the spring of 1879. After changing some minor details, and perfecting the coupling, photographs and cuts were made and circulars issued, dated November, 1879. The spring and summer of 1879 having demonstrated that the device was a success, its manufacture was entered into in large quantities, in the winter of 1879-1880. The difficulties found with the round wire springs led to experimenting in the fall of 1879 with the flat U-spring, which was finally successful, and used in place of the round wire springs about a year later.

Q. 6. You speak of experimenting with the machine produced in the fall of 1877. What were those experiments?

A. The experiments in the fall of 1877 with one of the regular walking cultivators with this device applied thereto, consisted in trying to ascertain the dimensions and the relative positions of the various other parts of the device with the view of overcoming the difficulty which we found to exist in the shape of a tendency of the increasing power of the spring as the beam raised to produce uneven plowing by impelling the shovels to come out of the ground. We had many long and tedious experiments at first, from the fact that when the points of the shovel rested on the ground the beams and shovels were so nearly balanced by the power of the spring that the beams would just barely stay down, and unless the handles of the cultivator were held down, satisfactory plowing could not be done. Finally, the adjustment of the connection between the interposed lever and the spring to a point nearer the pivot of the lever gave the beam sufficient power over the spring to enable the shovels to stay down and do satisfactory work. In explaining patent No. 243,123, with reference to the last answer, when the device was first made the upper end of the J-spring was so high that the connection between the top end of the spring and the outer end of the interposed lever was so far from the point at which the lever was pivoted that the power of the spring over the beam was too great to admit of the satisfactory performance of the shovels. Now, it will be seen that, by shortening the vertical part of the J-spring, without changing the lever, this connection between the lever and the spring will be brought nearer to the center, of which the lever is the radius, thereby reducing the power of the spring to lift the beam as the shovels are raised from the ground, the outer end of this lever will raise, practically, in a quarter of a circle from a horizontal position, while the top end of the J-spring travels nearly a horizontal line. The result is, that as the connection between the top of the J-spring and the end of the interposed lever is carried farther and farther from the center, of which the lever is a radius, the power of the spring over the beam is gradually increased until the spring is able to support the beam. This effect is aided by the fact that the connecting chain between the lever and the beam is gradually approaching the center by the same movement of the lever. The beam is thus held up by the spring, not by the increase of the tension of the spring, but by the increase of power over the beam from the mechanism of the device, although at this point the spring is at its weakest point of tension. One of the greatest difficulties to overcome in this device, and which made the firm very careful about adopting it, was the fact that the spring was under the greatest strain at the time when it was least wanted, and at a time when the various movements of the shovels kept the spring constantly under great strain and some vibration.

Q. 7. You have already stated when yon first applied this device, but, in order that there may be no misunderstanding, please state again when you applied it for the first time?

A. I first applied the spring practically, as shown in patent No. 243,123, late in the summer or early in the fall of 1877—I think in September. That is as near as I can remember; I can not give specific dates.

Q. 8. You have spoken of the use of a flat U-spring which was in use by the Furst & Bradley Manufacturing Company when you left. Please look at "Defendant's Exhibit Bradley Patent No. 270,629." and state to what extent. if at all, the spring shown in that patent resembles the U-spring device as used by the company?

A. The U-spring device, shown in "Defendant's Exhibit Bradley Patent No. 270,629," is an exact representation of the spring device used by the Furst & Bradley Manufacturing Company when I left their employ, January 1, 1884. We commenced these experiments in the fall of 1879 on acconnt of the criticisms made by Mr. J. H. Bradley, his desire being to make the device more compact, and so that the entire spring arrangement could be fastened to the cultivator arch at one point and as one piece, as, in the previous case with the round spring, we had a long series of experiments before we arrived at a satisfactory arrangement, especially with reference to the durability of the spring. As already pointed out in the old device of 1877, the peculiar office of the spring subjected it to great strain, and, in the fall of 1877, we broke many of the round springs, though in the fall of 1879 we went through nearly the same experience with the flat springs, and were finally compelled to have them made of the best quality of cast steel. The device, as shown in this Bradley patent, with spring, levers, coupling, and mode of fastening to the cultivator, is a very good representation of the cultivator as made when I left the concern.

Recess until 2 P. M.

Resumed after recess.

Q. 9. What kind or class of cultivators did you use in applying your spring in 1877, and state whether or not the machine, as you then had it, could be used, or, in other words, whether it was an operative machine?

A. As already stated, in answer to interrogatory 7, I first applied the spring practically late in the summer or early in the fall of 1877, and, in all of the experiments, a full-sized two-horse straddle-row walking cultivator was used. The first time the device was applied, the machine was set up on the second floor in that part of the factory facing Jefferson street, and on the west side of that street. The device, as far as the differential action of the spring was concerned, with relation to the beam, was perfectly successful on the floor with the cultivator wheels blocked up so as to represent the difference between the ground and the depth of the furrow. After taking it into the field that fall for experiment the unevenness of a cornfield as compared to a floor was the first point which I had to meet and overcome. This was soon done, and, stimulated by the criticisms of the firm, I produced a full-sized working cultivator within a month of the first production of the device. The cultivator with the spring attachment, as so produced, was capable of practical work in a cornfield, but, like all new things, was, of course, subjected to a great many trials and experiments with the view of uncovering all possible disadvantages.

Q. 10. Are you able to produce the old circulars or cuts representing these machines, or the different kinds made; if so, will you produce them with such comments upon them as you may be pleased to make?

A. In answer to the last question I produce the following circulars issued by the Furst & Bradley Manufacturing Company. The first one was printed in 1877, and on the inner side of the back cover is a cut of the regular Furst & Bradley walking cultivator as made by them previous to and at the time, and in this cut is represented Bicknell's hang-up attachment. The right-hand beam is represented in the cut as down in working position with the shovels in the ground, and with the beam riding on the spring. The left-hand beam is represented as raised up and being automatically supported by the pinching device. The circular was printed in 1877, and illustrates the various goods, including cultivators, as prepared for the market and improved for 1878. It was the practice of the house to wait until improvements were completed before making cuts and advertisements. The device in this cut is the one referred to in a previous answer as being suggested by F. W. Bicknell during the cultivator-spring experiment carried on through the spring and summer of 1877.

I also submit a printed price-list for the fall trade of 1878 containing prices of two-horse wheeled cultivators with iron and wood beams and provided with the patent hang-up attachment suggested by Bicknell.

I also submit a circular showing the cut prepared during the summer of 1879, of the differential lever and spring device invented in the fall of 1877. The principal difference between this cut and the drawings in the patent consists in showing the improved coupling by which the head of the beam was connected to the axle of the cultivator. In this cut is also shown the round rod connecting the swinging lever with the beam, in the place of the chain first used, and shown in the Hague Patent No. 243,123. Outside of the substitution of the rod for the chain, and outside of the new beam and axle coupling, this cut represents the spring device substantially as first set up in September, 1877, and used in the field by us that fall. The date printed on this circular is 11, 19, 9; or, November 19, 1879.

I also submit a price-list, giving prices for the spring trade of 1880 for the Furst & Bradley walking cultivator, both iron and wood beam, with spring.

(The circulars and price-lists produced by witness are offered in evidence, and marked "Defendant's Exhibits Hague No. 1, No. 2, No. 3, No. 4," respectively, said numbers being the order in which said papers were referred to by the witness.)

(Witness continues:)

As an indication of the constant effort at improvement, even after goods were sold and in use, the difference between the couplings shown in "Exhibit Hague No. 3," and the coupling shown in the Bradley Patent No. 270,629, dated January 16, 1883, may be noticed by the change of the connection between the end of the differential lever and the beam, as in the original device, to a connection between the differential lever and the hook on the coupling. Many in the original form had been manufactured and sold previous to the change of connection from the beam to the coupling.

Q. 11. State what the practice of the Furst & Bradley Manufacturing Company was in respecting to the putting up changed or improved machines on the market, during the time you were with them?

A. The firm, during my experience with them, was very conservative and careful about changes and improvements in their implements, and subjected alleged improvement to a very careful and thorough scrutiny and experiment, holding, as they often stated to me, that they preferred to be very sure of the success and advantage of a change before adopting it.

Cross-Examination by G. H. Christy, Esq.

X Q. 12. When was it that you made sale of this invention of yours to the Furst & Bradley Manufacturing Company?

A. When I went to work for them in 1876 I agreed, for a certain consideration, to assign all patents to them that I might invent while in their employ.

X Q. 13. Then, this invention was assigned in accordance with that agreement, was it?

A. Yes

X Q. 14. Do you happen to remember when the assignment was executed?

A. At the head of the specification of the patent No. 243,123 appears the following, which I consider an answer to your question. "Charles A. Hague, of Chicago, Illinois, assignor to Furst & Bradley Manufacturing Company, of same place."

X Q. 15. Have you any recollection on the subject inquired about independent of what is contained in the quotation you have just made?

A. In answer to this question I would state that, after the first agreement, in the summer of 1876, and as long as I was in their employ, such patents were issued assigned without any further discussion.

X Q. 16. I will ask you now for the third time what recollection you have, if any, as to the time when you made the assignment of the invention referred to. Please answer that question if you are able to do so.

A. Without wishing to prolong the matter, I would simply say that I was, under the agreement, to assign all patents on agricultural implements to them, and always supposed that my signature to the application for any such patent effected the assignment.

X Q. 17. Then, if I correctly understand you, you have no recollection whatever of having ever executed any assignment of this particular invention, except as it was included in the original agreement between you and your employers when, or previous to the time, you entered their employ; is that correct?

A. I know that there was no other assignment on this particular patent.

X Q. 18. You mean, do you, except the agreement under which you entered their employ?

A. I recollect no other assignment.

X Q. 19. I understood you, in your last answer but one, that you were sure there was no other. Do you still remain sure, or have you some doubts about it now?

A. I have no doubts about the agreement already stated. I meant to cover that fact in answering interrogatory 17.

X Q. 20. Then, if I correctly understand you, you still adhere to the correctness of your answer to cross-question 17, do you?

A. In general terms, yes.

X Q. 21. And you are just as sure of the fact therein stated as of any other fact which you have testified to to-day, are you?

A. No.

X Q. 22. Who paid the expenses of procuring this patent No. 243,123.

A. Furst & Bradley Manufacturing Company.

X Q. 23. Do you remember what, if anything, you had to do with the preparation and prosecution of the application?

A. I made preliminary sketches, outlined the idea of the invention, and furnished West & Bond, the attorneys of Furst & Bradley Manufacturing Company, with information which they requested in preparing the papers.

X Q. 24. Is that all you had to do with it?

A. It was my practice, and part of my business, to have models prepared when necessary, and to arrange full-sized machines, so as to show the invention. I also looked over the specification and claims, and corrected them, where necessary, before signing

X Q. 25. After you signed the application papers, did you have anything more to do with the case during its prosecution, or was that left to the attorneys of the Furst & Bradley Manufacturing Company?

A. It was the general practice, in case of interferences or obstructions to the application, to make me acquainted with the matter, so that I was conversant with the state of the case as it progressed.

X Q. 26. When were you first applied to by letter or otherwise, and by whom, with reference to giving information or testimony in reference to this invention—I mean since the patent was issued to you?

A. At various times since the issue of the patent, before and after I left the firm, Mr. J. H. Bradley has informed me that litigation in connection with the patent was possible; and I understood from him that my testimony would be wanted, if such litigation came to pass.

X Q. 27. Has any effort been made to get your testimony at any time previous to this—within the last two years?

A. Yes; several times.

X Q. 28. Do you know any reason why such efforts were not successful; and if so, what are they?

A. All I know is that Mr. J. H. Bradley has called my attention to the matter several times during the last three or four years. When I have happened to meet him I have always told him, that if convenient I should be glad to tell the facts in the case any time, and do not know any reasons of his for not calling on me. Having been out of the implement business since January 1, 1884, and having been pretty busy in other directions since, I have not paid much attention to the matter.

X Q. 29. Do you know of any reason of any kind why your testimony was not taken sooner? If so, please give it and state all the reasons known to you.

A. I know nothing about it.

X Q. 30. Then, so far as you know, the testimony you have given to-day might as well have been procured at any time since November 25, 1879, as now. Is that correct?

A. Up to January 1, 1884, my testimony could have been had at any time, so far as I know; but since that time, as I have been busily engaged and have traveled to distant points on business, there have been times when it was impossible, often very impracticable, and, of course, I am unaware as to how Mr. Bradley considered such facts.

X Q. 31. Aside from the times when you have "been busily engaged and have traveled to distant points on business," as stated in your last answer, since January 1, 1884, your testimony might have been given one time as well as another, might it not, so far as your knowledge goes?

A. I know of circumstances that might have prevented it.

X Q 32. Do you know of any reason why it was not taken a year or two ago?

A. No.

X Q. 33. How is J. H. Bradley connected with the David Bradley Manufacturing Company?

A. As I understand it, he is a stockholder and now president of the company, although I am not certain.

X Q. 34. If I understand you correctly, you have had a good many talks with him in reference to this litigation, either actual or prospective. At the time of these interviews with him you understood, did you, that he was speaking on behalf of the company?

A. I don't know as I stated that I had a good many talks with Mr. Bradley with reference to litigation in connection with the patent, and, as a matter of fact, I have met him about twice a year since January 1, 1884, and whatever was said was of a personal and conversational nature, without any particular understanding about the matter. Of course, while I was with the firm, I was in constant contact with him and subject to his instructions.

X Q. 35. What connection did J. H. Bradley have with the firm or company, prior to January 1, 1884?

A. During the time I was with the firm he was the secretary of the company, and I think, during the latter part of the time, he was secretary and treasurer.

X Q 36. When and where did you see him last?

A. This morning about ten o'clock, in his office, in Chicago.

X Q 37. When and where did you last see F. W. Bicknell?

A. At the same time and place.

X Q. 38. Do you know where he resides now?

A. Who?

X Q. 39. F. W. Bicknell.

A No.

X Q. 40. How many of the Bicknell machines were made as you have testified?

A. I am not positive, but I think several hundreds.

X Q. 41. Please give your nearest estimate?

A. If I was to estimate I should say two hundred.

X Q. 42. Two, you call several, do you?

A. I should call more than two, several.

X Q. 43. To the best of your recollection, would the number much exceed two hundred, or go as high as three hundred?

A. I would not undertake to answer any closer.

X Q. 44. Do you mean that you cannot honestly answer any closer?

A. I infer from your question that you want a close estimate, and that I am unable to make.

X Q. 45. Question repeated.

A. Answer repeated.

X Q. 46. Is that the best answer you can give to that question? By best answer I mean the most correct and truest.

A. How close an estimate do you want?

X Q. 47. The closest you can give in numbers consistently with truth, and according to the best of your knowledge, recollection and belief.

A. Two hundred.

X Q. 48. You give that, do you, as the estimate which my last previous question calls for?

A. Yes.

X Q. 49. Were all these two hundred Bicknell machines sent out during the season of 1878, or were some carried over and sent out the next year, for the next year's business?

A. When I was with the Furst & Bradley Manufacturing Company my responsibility ended at the warehouse, and I paid no particular attention to the exact number of goods shipped, of any kind.

X Q. 50 Were any machines with the Bicknell attachment sold or sent out for the business or season of 1879.

A. I do not know.

X Q. 51 Were there any on hand at the close of the cultivator selling season of 1878?

A. I do not know.

X Q. 52. Do you mean that it was no part of your business to know what machines were on hand, or were being made, or were required for the next year's trade, or do you mean that you have forgotten?

A. In answer to your question, I would state, that I received written orders from day to day from Mr. B. C. Bradley, general superintendent, of goods required to be manufactured, and was conversant, pretty thoroughly, with what was going through the factory, and, in a general way, what was in the warehouse, and what was

being shipped, but I paid very little attention to the shipments, except where special cases or complaints arose. Further, my memory fails me in some respects.

By consent of counsel, the further taking of testimony is adjourned until ten o'clock to-morrow morning, February 9, 1889.

Saturday, February 9, 1889; ten o'clock in the forenoon; met pursuant to adjournment; present as before.

X Q. 53. When the force of the establishment was turned on to the Bicknell machine, what was done with the springs that were tried during the experiments which you say you made in the latter part of 1877; that is, what became of them?

A. The Bicknell device, having been started first, was pushed to the front to see what it would accomplish, and the spring which I invented in 1877 was held back and kept in the factory.

(The question being re-read to witness, he answers as follows:)

It was the practice of the firm, in bringing out new implements, to try the experiments on full-sized machines. When the experiments were completed and the invention perfected, the original machines were taken apart, all available stock was used in manufacturing, and useless material was thrown in the scrap. I cannot remember exactly what became of the specific springs with which the invention was completed in the fall of 1877, but presume that they either were shipped on a sample cultivator, or else thrown in the scrap.

X Q. 54. Does your last answer give all the knowledge you have in reference to what became of those particular springs?

A. Yes.

X Q. 55. Would you make the same answer as regards the springs, which you say you tried during your experiments of the fall of 1878; or do you remember more about these 1878 springs as tried than you do about the 1877, and you will understand I am referring particularly to what became of them?

A. I remember nothing of what became of any particular springs used in perfecting the invention. I did not keep track of any of those things.

X Q. 56. You say, in answer to interrogatory 5, when referring to these machines of yours, that "some samples were made during the winter of 1878-79, and shipped in the spring of 1879." Please give the names and residences of the parties to whom those sample machines were sent or shipped at that time?

A. I had nothing to do with the shipping, and do not know who they went to.

X Q. 57. Then, how do you know that any were shipped at all at that time?

A. From general knowledge of what was going on; that's all. I probably knew at the time, but, having so little to do with the commercial part of the business, I naturally remember very little about it; about the details.

X Q. 58. Can you give me the names of any parties who would be likely to know any more about it than you seem to, and tell me, if you know, where such parties are to be found?

A. I presume the firm keeps records of such maters for a reasonable length of time, and that is the most likely place I know of.

X Q. 59. Do you remember who had charge of shipments at that time in that establishment?

A. No.

X Q. 60. Can you give me the name of any person who was so connected with the shipping business of that establishment at that time that he could probably give the information which I have just been asking for?

A. At that time I had been with the concern a little over two years. I was not throughly acquainted with many details outside of the factory, and, as there were more or less changes going on, I could not state any name with positiveness. I had very little to do with that part of the business.

X Q. 61. Whose business was it at that time to direct about the sending out of sample machines and where they should be sent? Does your memory enable you to answer that question?

A. My opinion is that it was Mr. Furst, the president of the company; Mr. J. H. Bradley, secretary of the company, and Mr. B. C. Bradley, superintendent of the company.

X Q. 62. Why do you state it as your "opinion?" Do you mean that you do not know, or that you have no reliable knowledge on that subject, or, if you ever did know, that you have forgotten?

A. I have never seen any actual evidence that the gentlemen referred to were even stockholders in the company; but, from the way they acted, I firmly believed that they managed it, and as such managers, of course, dictated what would be an important part of the policy of the concern.

X Q. 63. Then, that is your sole reason, is it, for the "opinion" expressed in your last answer but one?

A. What opinion do you mean?

X Q. 64. The opinion expressed by you in your answer to cross-interrogatory 61?

A. Yes.

X. Q. 65. Can you give me the names of any workmen who aided you in the 1877 experiments you have been talking about?

A. No. There were a good many Germans and Swedes employed in the factory, the most of whom I knew only by sight, and remember little or nothing of their names. You must remember that these matters were important to me only in the results sought for, and I very naturally would not remember the names of workmen employed on specific jobs.

X Q. 66. Can you give me the names and the present whereabouts of any workmen who aided you in your 1878 experiment?

A. No. I can not remember them, and I know nothing whatever about their whereabouts now.

X Q. 67. You speak of other experiments made in the fall of 1879. Can you give me the names and present whereabouts of any persons who aided you in those experiments?

A. Mr. B. C. Bradley, now in Chicago. Mr. Bradley and myself did about all the experimenting referred to and included in my an-

swer to interrogatory 2, and, as changes were decided on, either he or I would take the pieces to different workmen, as was most convenient, to have the modifications made. We employed no special workmen for experimenting or model-making, the experiments being conducted upon full-sized, regular implements, and tried in actual use in the field at the various steps.

X Q. 68. What field do you refer to in your last answer?

A. I used the word field in a general sense.

X Q. 69. Can you particularize any farm where such machines were "tried in actual use in the field at the various steps," and, if so, please name or locate the farm so that it can be found. State the time of such trial, and name the parties that were present, and answer separately as to each trial?

A. I do not know, and never did know, the names of the farmers who owned the fields upon which these experiments were tried, but I can locate them very nearly. One place was on the left-hand side of the turnpike, which is the continuation of Milwaukee avenue, the place being situated, as near as I can recollect, about half a mile outside of the city limits of Chicago. Another place was just outside of the city limits, and just north of Madison street. Another place was near what was called West Fortieth street, about a mile west of the present Garfield Park, and just south of the Galena division of the Chicago and Northwestern Railway. Another place was about a mile outside of the city limits, on the south side of Madison street. The times of such trials were various, and extended over the time from the fall of 1876 to the fall of 1883. I can not specify any particular time that any particular trial took place, but I recollect, that, right after the final satisfactory test of the differential spring device, early in November, 1877, there came a very severe cold spell which prevented all further experiment, and I remember that we felt gratified to think that we had finished the matter up before the ground was frozen.

The parties present were generally different members of the company, teamsters, and sometimes one or more of the traveling men of the concern, besides myself.

X Q. 70. My last question called for the names of the parties that were present at each or any of these trials. If you are able so to answer it, please do so.

A. The parties referred to, in the last paragraph of my last answer, as different members of the company, were meant to include

Mr. Furst, president; Mr. J. H. Bradley, secretary; Mr. David Bradley, treasurer, and Mr. B. C. Bradley, general superintendent. The teamsters I only knew by their first names, and the traveling men referred to include the various traveling men employed by the firm in selling their goods, and the names of the particular ones that went out on these trials, I do not remember.

X Q. 71. What was the certain "consideration" referred to in your answer to cross-interrogatory 12?

(Objected to, as irrelevant and immaterial.)

A. Money.

X Q. 72. Then paid, or afterward to be paid, which?

(Same objection.)

A. As near as I can recollect, the agreement, which was verbal, my consideration was in the shape of a salary which was to be increased according to the value of services rendered, and in this agreement was also the understanding that I was to assign all patents on inventions which I might make during my employment with the firm. During the latter part of my employment, a portion of the consideration in money represented the earnings of a certain number of shares of the stock of the company.

X Q. 73. Was it any part of that agreement, as you understood it, that your salary or other compensation, was to be affected in any way by the character or value of the inventions you might make, or by any royalties, or patent fees, that might accrue under any patent or patents taken out by you?

(Same objection.)

A. My consideration was not affected by anything beyond the general results, and I had no claims for royalty.

X Q. 74. Did you ever receive any royalties?

(Same objection.)

Or any money which you believed to represent any royalty or any portion of royalty?

A. No.

X Q. 75. And that is true, is it, as regards any license fee or anything of value accruing under your patent?

(Same objection.)

A. I wish to be understood that I recived nothing from the Furst & Bradley Manufacturing Company, but my salary and the earnings of the stock already mentioned. This is absolutely all there is to it.

X Q. 76. My X Q. 74 was intended to cover the entire time from the date of your first agreement with the Furst & Bradley Manufacturing Company down to the present. That there may be no misunderstanding on this matter, I will ask you again, if you have at any time received anything by way of royalties or patent fees, or anything else of value under your cultivator patent, or patents, or which you understood to represent anything due you on that account, down to the present time?

A. No.

X Q. 77. Have you any interest of any kind, or claim to have any interest of any kind, in the Hague patent 243,123, or in any royalties, license fees or other receipts therefrom or thereunder, either as heretofore accrued, or as to accrue hereafter?

A. No.

X Q. 78. Do you expect that any result of this litigation or of this suit, whether favorable to the defendant or not, will work in any way either to your benefit or to your disadvantage?

A. No.

X Q. 79. You speak, in answer to X Q. 75, of having received from the Furst & Bradley Manufacturing Company nothing but your salary and the earnings of certain stock referred to. Did both of these stop when you left the company?

(Objected to as immaterial, irrelevant and incompetent.)

A. Yes.

X Q. 80. Then, you have received nothing on either account since that time; is that correct?

A. That is correct.

X Q. 81. And it is also true, is it, that you have no promise or expectation of receiving anything on either account, at any time hereafter?

A. It is.

X Q. 82. What style or patterns of machines were made and sent out for the season of 1879; by season I mean the corn-cultivating season?

A. Practically, as shown in the "Exhibit No. 3," dated November 19, 1879, with the possible exception that some of them may have had chains instead of rods between the differential lever and the cultivator beam.

X Q. 83. I think you misunderstood my question. I was not asking about the samples of your own machine, which you say were shipped in the spring of 1879, but about the machines other than these which were made and sent out by your company in its regular business. Please answer the question with this understanding of it, and also understand, that, by machines, I mean corn cultivators.

A. I did misunderstand the question, and supposed that you referred to corn cultivators with springs attached. The great bulk of the cultivator business that spring was, no doubt, done in cultivators without springs, but the cultivators themselves were the regular walking corn cultivators, to which the springs were attached as samples that spring.

X Q. 84. Do you recognize any of the cuts on your "Exhibit No. 1," as illustrating the construction or style of machines sent out for that season's business? I mean for the season of 1879.

A. Yes.

X Q. 85. Please state which ones.

A. On the inside of the front cover is the cut of the wood-beam, single-pole cultivator; this cultivator also being made with iron-beams. On page 2 is the regular split-pole, iron-beam cultivator; this cultivator also being made with wood beams. On page 4 is shown a combined riding and walking cultivator. On page 6, another view of the last named cultivator. These cultivators represent the bulk of the business for the corn season of 1879, and outside of the samples of the spring cultivators sent out that year.

X Q. 86. Please state now how many of these were made during the latter part of 1878 and the beginning of '79 for the corn cultivating season that year?

A. Of course I cannot remember accurately, but should say, from three to four thousand of the iron-beam walking-cultivators; fifteen to twenty-five hundred of the wood-beam cultivators, and probably two thousand combined cultivators.

Recess until 2 P. M.

Resumed after recess.

X Q. 87. When was it you were promoted from master mechanic to the position of assistant superintendent at Furst & Bradley's works?

A. It occurred at no particular or specific time, but one gradually merged into the other as the business and work increased. The nearest date I could name would be 1881.

X Q. 88. Who was your successor in the position of master mechanic, at the time you became assistant superintendent?

A. There was none. I practically filled both positions.

X Q. 89. You spoke somewhere about having met Mr. J. H. Bradley twice a year. Were these meetings casual or accidental, or by appointment, or for business purposes, or otherwise?

A. Both.

X Q. 90. You mean some were accidental, and some by appointment on business?

A. None of them were by appointment, and, to explain, I would state, that, previous to Thursday of this week, the last time I met Mr. Bradley was at the Chicago Exposition, in September, 1888, by accident. The time before that was in March or April, 1888, at the Union League Club, in Chicago, by accident. The next meeting back of that, that I remember, was in October, 1885, at which time I went to him with the view of obtaining any possible assistance he might give in connection with soliciting a contract for pumping machinery for the water-works of the city of Chicago. Back of that, I do not distinctly remember meeting him after leaving the firm, January 1, 1884, although I might possibly have done so.

X Q. 91. During this time, have you had any correspondence with him?

A. Nothing except a letter addressed by him to the firm of Henry R. Worthington, in New York, last week, and which was turned over to me for explanation; also, I received a personal letter from him at the same time and place, the contents of both of these letters being a request for my attendance as a witness in this case.

X Q. 92. Have you any written or printed memoranda, other than what you have already produced, by which to fix the dates which you have testified about between 1876 and November, 1879?

A. No. When I left the Furst & Bradley Manufacturing Company, I left in their possession all such memoranda pertaining to their affairs that I knew I had.

X Q. 93. Was this cultivator patent of yours the first one of any kind you ever took out?

A. No. The first patent I ever took out was on a relief valve for steam fire engines about the year 1873; that is about it; somewhere between 1870 and 1875.

X Q. 94. Any others?

A. The next patents that I remember were on sulky plows, when in the employ of Furst & Bradley Manufacturing Company, about 1877 or 1878; the patents, of course, can be easily identified.

X Q. 95. Any others?

A. I think not before the cultivator patent.

X Q. 96. Any since?

A. Yes, one on an improvement in drop-presses and one on steam pumping machinery. The one on drop-presses was in 1883 or 1884, and the one on steam pumping machinery was in January, 1887.

X Q. 97. You have several times named Mr. B. C. Bradley. The gentleman thus referred to is now present, is he not, and has been during your entire examination?

A. Yes.

(Complainant's counsel here notes the fact that this witness has in many cases made answers or portions of answers which were not responsive to the questions asked, and, in such cases, such answers are, to that extent, objected to)

CHARLES A. HAGUE,
M. E.

Subscribed and sworn to before me, this 9th day of February, 1889.

[SEAL]

HARRY T. JONES,
Notary Public.

At the request of complainant's counsel, and by consent of defendant's counsel, the further taking of testimony is adjourned until Tuesday, February 26, 1889, at ten o'clock A. M.

Tuesday, February 26, 1889, 10 A. M. Met pursuant to agreement. Present as before.

Deposition of Byron B. Bradley.

Byron B. Bradley, a witness produced on behalf of defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Deposition of Byron B Bradley.

Q. 1. State your name, age, residence and occupation.

A. Byron B. Bradley; age, 49; occupation, mechanic; residence, Chicago.

Q. 2. State whether or not, during the year 1876 and the years following, you were in the employ of the Furst & Bradley Manufacturing Company, and its successors, the David Bradley Manufacturing Company; also when, if at any time, you left the employ of such company, and what position or positions you held while in the employ of either or both of said companies.

A. I was in the employ of Furst & Bradley Manufacturing Company and David Bradley Manufacturing Company in the year 1876 to the year 1885. I left their employ. I was in the employ of both companies as superintendent of the manufacturing department.

Q. 3. Do you know Charles A. Hague, who was at one time in the employ of said company?

A. Yes.

Q. 4. When, or about when, did he enter the service of either of said companies?

A. He commenced work for Furst & Bradley Manufacturing Company in 1876.

Q. 5. State generally what improvements, if any, were being made at the factory during the years that Hague was with you, in spring cultivators and particularly what improvements in such cultivators were made by the said Hague during the time he was with the Furst & Bradley Manufacturing Company, and give the dates of the making of any improvements you may mention as nearly as you can.

A. A part of our cultivators were made with the chain running from beam to loop on the end of the cultivator pole. In the spring of 1877 we found it necessary to put a spring on the end of the chain to allow the operator to force the beam of the cultivator down in uneven ground. While those were being made and sent out I called Mr. Hague's attention to the necessity of having a spring that could be attached to the frame and to assist in holding up the beam when not in operation and could be operated in uneven ground. He drew me a sketch at that time of a triangle, one point fastened to the arch of the cultivator; one of the other points attached to the beam by a chain, and the other point attached to a spring. Late in the summer or early in the fall of that season Mr. Hague commenced building a spring and connections with an intermediate lever for producing the effect desired. Mr. Bicknell also came in with a device which we experimented with, and finally adopted for the coming season. There were various changes and experiments made with Hague's spring up to the summer or fall of 1879, when my brother, J. H. Bradley, suggested the necessity of having a spring and its attachments so that it could be sent into the country as an extra, or combined together so that it could be shipped and put on the cultivator without getting it out of position by the ordinary farmer. I then suggested the U spring, and got up the designs for same. The experiments extended through the following year.

Q. 6. Please look at patent, No. 243,123, to C. A Hague, dated June 21, 1881, and state in what respects, if at all, said patent represents the Hague improvements mentioned in your last answer.

A. Patent No. 243,123 represents style of spring attachments designed by Mr. Hague, and experimented with by him and I in the fall of '77, and spring and summer of 1878.

Q. 7. Please state what those experiments were.

A. Our first experiments were made on a full sized machine, set up in the factory with wheels blocked so as to get the full movement of the cultivator-beam After we had got a set of springs that would stand the excessive strain, we made two or three extra pair; took it into the field for a field trial.

Q. 8. What year was that?

A. The fall of 1877.

Q. 9. State whether or not the machine as you then tried it was operative, and what difficulties, if any, were encountered in its field use.

A. We found on experiment in the field, that the spring arm was too long, and the intermediate lever too long, and that we broke all the springs in a very short time after we got there.

Q. 10. Did you at any time during that fall remedy any or either of these difficulties, and if so, how?

A. After making a great many sets of steel springs tempered in water and drawn, tempered in oil and drawn, I finally took some cold rolled iron, which we had in stock and kept for repairing old rakes, made in the '60's; after turning several of them, we had coils enough; had to make length of arm and leverage, so that it lifted the beam of the cultivator too high. With that set of springs and others of the same material, we made our experiments during '77 and '78, meantime experimenting with different kinds of steel and tempering to stand the excessive strain of a shorter spring and intermediate lever.

Q. 11. When did you get the machine properly balanced?

A. We didn't get the machine properly balanced to our satisfaction until the spring of '79.

Q. 12. What changes, if any, were made to balance the machine which differed from Mr. Hague's original design?

A. The shortening of the arm of the spring, the shortening of the intermediate lever, and hitching of the chain near to the clevis.

Q. 13. Please look at the patent, No. 270,629, to B. C. Bradley, dated January 16, 1883, and state whether or not you are the B. C. Bradley mentioned in said patent, and to what extent, if any, said patent shows the changes which you have stated that you made in the machine?

A. I am the same B. C. Bradley. Patent No. 270,629 shows in detail the improvements that I made upon the cultivator springs.

Q 14. Please look at the catalogue now shown you, and state whether or not you find therein shown the loop and chain cultivator mentioned by you, and if so, at what pages?

A. In the Furst & Bradley Manufacturing Company's catalogue, on pages 20 and 21, there is an iron-beam split-pole walking-cultivator, and a wood-beam split-pole walking-cultivator, showing the chain from beam to loop on end of poles, which illustrate fully the manner of attaching those improvements. The catalogue illustrates 1875, and they were used in 1876 and 1877.

(Catalogue shown witness offered in evidence, and the same is marked "Defendant's Catalogue No. 5, B. C. Bradley.")

Q. 15. Please look at the catalogue or pamphlet marked "Defendant's Exhibit Hague No. 1," and state whether or not you find shown therein the Bicknell device, mentioned by you.

A. Hague's Exhibit No. 1, Furst & Bradley Manufacturing Company's catalogue, inside of back cover, shows the Bicknell device.

Q. 16. How many field trials of the Hague machine did you make during the latter part of the summer or fall of 1877?

A. We made one field trial, and it froze up the day before we could go out again.

Q. 17. State, if you can now remember, who was present when you made this trial.

A. I remember no one being with me excepting Mr. Hague and the driver.

Q. 18. How many shop trials did you make in 1877?

A. After Mr. Hague had the machine set up in the factory, our trials were continuous as far as our time would permit. We were experimenting with steel springs. Sometimes they would last for a minute, and sometimes five or ten, before they would fly to pieces. Our experiments were made in lengthening leverages and shortening them to get some point where we could make a spring that would do the business passably well.

Q. 19. Who, if any one, assisted you and Mr. Hague in making these shop experiments?

A. Mr. Gaede done most of the taking down and putting on in those experiments.

Cross-Examination by Mr. French.

X Q. 20. You have stated, in your direct examination, that you got the Hague devices properly balanced to your satisfaction in the spring of 1879; please tell me how you are enabled to fix that date?

A. By the general experimenting between the fall of 1877 and the season of '78, in getting material to make a spring out of that would stand the strain.

X Q. 21. Have you any documents by which you can fix the date as the spring of 1879, or do you rely upon your memory?

A. I have no documents, and rely upon my memory.

X Q. 22. Do you in like manner rely upon your memory alone with regard to the experiments with the spring of 1877?

A. Yes, sir.

X Q. 23. In what month was the experiment made in 1877 in the field?

A. It was in the fall; I could not tell you the exact month nor date.

X Q. 24. According to the best of your recollection, was it as late as November?

A. I could not say as to that; it might have been in October; it might have been in November.

X Q. 25. You state that you made one field trial in 1877, and that it froze up the day before you could go out again. Do you mean by that that the ground remained frozen, so that you could not go out again that fall or winter?

A. We were not able to go out again that fall. The day we planned to go out it froze up so that we were not able to go out. Whether there was a day after that that we could have gone, I could not say, as we did not send a man out to ascertain the condition of the soil.

X Q. 26. When did you next make a field trial?

A. The next spring.

X Q. 27. How many times did you go out the next spring?

A. We took them out every opportunity we had during the spring, summer and fall of that season.

X Q. 28. Have you any idea whether you went out once or a dozen times? Please give the best estimate you can make?

A. I should say that we went out at least half a dozen times.

X Q. 29. Do you remember who was with you on any of these occasions?

A. Mr. Hague, myself and driver usually had charge of these experiments.

X Q. 30. Do you remember of any one else being present at those times?

A. J. H. Bradley would sometimes drive out during the day, and bring some of the traveling men, if they were in, to see the operation of the machine.

X Q. 31. Did you make any field experiments in the year 1879; if so, when?

A. We made experiments during the spring, summer and fall of 1879.

X Q. 32. At the times in 1877, 1878 and 1879, when you say these experiments were being made, were you also engaged in making field experiments with other machines of different kinds?

A. We were.

X Q. 33. Do you remember what other machines, if so, please state what they were?

A. Plows, cultivators and rakes.

X Q. 34. When did you first build and ship out from the factory cultivators having on them the Hague spring devices?

A. In the spring of 1879.

X Q. 35. Where they shipped in the spring of 1879, or built then?

A. They were built and shipped.

X Q. 36. About how many were built and shipped in 1879?

A. Between two and three thousand.

X Q. 37. Do you know to whom any of these were shipped in the spring of 1879?

A. I do not.

X Q. 38. Have you examined the books of the David Bradley Manufacturing Company to ascertain how many were shipped in 1879?

A. I have not.

X Q. 39. Have you access to their books?

A. No, sir.

X Q. 40. Do you depend solely upon your recollection with regard to the shipments of 1879?

A. Yes.

X Q. 41. When did you get up the U-shaped spring?

A. We experimented with it in 1880.

X Q. 42. When did you first put it on cultivators which were shipped out from the factory?

A. We shipped them out generally in 1882.

X Q. 43. Did you ship any prior to 1882?

A. I think there were a few sent out in 1881.

X Q. 44. In the spring or fall?

A. During the cultivator season.

X Q. 45. What is that season?

A. The time the corn is high enough to cultivate until it is laid by.

X Q. 46. Then it was in the spring or summer that you shipped out these few machines in 1881?

A. I think it was in the fore part of the summer.

X Q. 47. When did Furst & Bradley commence making cultivators shown in catalogue No. 5, having the beam suspended by chains from the tongue?

A. They were gotten out for the season of 1875.

X Q. 48. How long did they continue to make this cultivator?

A. Until the season of 1877.

X Q. 49. Did they ship out any in the season of 1878?

A. Part of those cultivators in 1878 had the same attachment.

X Q. 50. When was it that you connected a spring with the chain so as to let the shovels follow the inequality of the soil?

A. We sent them out in the cultivator season of '77, as extras.

X Q. 51. Did you send any out either as extras or on cultivators during the season of 1878?

A. Yes, sir.

X Q. 52. Did you during the cultivator season of 1879?

A. No, sir.

X Q. 53. When did you first send out cultivators having on them the Bicknell device?

A. The spring of '78.

X Q. 54. Did you send them out in the spring of '79 also?

A. No, sir.

X Q. 55. Who were the officers of the Furst & Bradley Manufacturing Company, in the year 1877, the year 1878, and the year 1879?

A. Conrad Furst, president; David Bradley, treasurer; J. Harley Bradley, secretary; B. C. Bradley, superintendent; for the years mentioned.

X Q. 56. Do those officers all now reside in Chicago?

A. The treasurer, secretary and superintendent do; I no not know where the president resides.

X Q. 57. He does business here in Chicago, does he not?

A. That I could not say.

X Q. 58. What connection have you now, if any, with the David Bradley Manufacturing Company?

A. I have no connection.

X Q. 59. Are you a stockholder?

A. I represent a few shares of stock.

X Q. 60. What is your relationship to J. Harley Bradley and David Bradley?

A. David Bradley is my father, and J. Harley Bradley is my brother.

X Q. 61. David Bradley Manufacturing Company is the successor, is it not, to the Furst & Bradley Manufacturing Company, succeeding to all its rights and liability, continuing at the same old business in the same old place?

A. The same company with the name changed, and it is not a new corporation.

Recess until two P. M.

Two P. M. Met pursuant to adjournment.

X Q. 62. What time in the year 1880 did you first commence to experiment with the U-spring?

A. I think it was in the spring and summer.

BYRON C. BRADLEY.

Subscribed and sworn to before me, }
this 26th day of February, A. D. 1889. }

[SEAL] HARRY T. JONES,
Notary Public.

Deposition of William H. Gaede.

William H. Gaede, a witness produced on behalf of defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Deposition of William H Gaede.

Q. 1. State your name, age, residence and occupation.

A. William H. Gaede; age, 35; residence, 971 N. Leavitt street, Chicago; occupation, foreman in machine shop of David Bradley Manufacturing Company.

Q. 2. When did you enter the employ of the David Bradley Manufacturing Company?

A. The 8th of October, 1877.

Q. 3. Had the name of the company been changed at that time?

A. It was then Furst & Bradley Manufacturing Company.

Q. 4. What position did you hold, or what kind of work were you doing, the first one or two years that you were with the company?

A. I was machinist and was doing pattern work, and part of that time I was experimenting on new implements.

Q. 5. Do you know Charles A. Hague; if so, when did you first know him?

A. I knew Mr. Hague first in June of 1876.

Q. 6. Do you know of his making or working upon cultivators of any kind after you went into the employ of the company?

A. Yes, sir.

Q. 7. What kind of cultivator was he working on when you first knew of his working on cultivators, and state its construction, as near as you can?

A. It was what they called a walking-cultivator. One side of it had an attachment to elevate the beam and hold it there—the arrangement of the spring to help raise it and hold it.

Q. 8. State whether or not you did any work on such cultivator; and, if so, state what work you did.

A. Mr. Hague brought me a number of pieces to drill and attach to his cultivator, and, after attaching, to see that it worked all right.

Q. 9. Can you describe any of these pieces so made by you, and, if you can, please do so?

A. The nearest that I can say is, that they were pieces which I drilled and attached to the cultivator.

Q. 10. Please look at the patent, No. 243,123, to C. A. Hague, dated June 21, 1881, and state whether or not you recognize in the drawing of said patent any pieces similar to those made by you; and, if so, please point them out by the reference letters.

A. I remember this piece marked A and L. Those are the pieces that I worked on.

Q. 11. What did you do to them?

A. I drilled the holes in them, and attached the same to the cultivator.

Q. 12. State whether or not the cultivator was so far completed that it could be put into operation at or about that time.

A. It was.

Q. 13. Have you any memorandum or means by which you can fix the date or time of doing the work which you have stated?

A. There is a time-book which Mr. Hague used, and a memorandum book.

Q. 14. Can you produce these books or either of them, and if so, please produce them, and point out the pages and entries by which you are enabled to fix the dates.

A. The time was found on page 36 of Mr. Hague's time-book.

(Counsel for defendant requests the notary to copy said page into the record, which is done, and is as follows:)

Oct.	8, '77,	Star Pat.			5			
	9,	"			10			
	10,	"			10			
	11,	"			10			
	12,	"			10			
	13,	"			10			
	15,	"			10			
	16,	"			7	cul. ex.	2, nsm.	661.
	17,					cul. pat.	10.	
	18,	"			3½	"	2, cul. ex.	4½.
	19,	fr. 1½				cul. pat.	8½.	
	20,	cul. ex. 1				"	9.	
	22,	" 2½				"	nsp.	7½.
	23,	2				"	"	8.
	24,	2½				"	"	7½.
	25,	sdr. 3	hand R. p.					7.

Q. 15. Which of the entries on said page refer to cultivators; and how do you identify them as being connected with the Hague cultivator?

A. There is October 16, worked two hours on cultivator experiments. Then, on the 18th, I worked four and a half hours on that cultivator. On the 20th, I worked one hour on the cultivator experiments. On the 22d, two and a half hours. On the 23d, two hours; 24th, two and a half hours.

I identify them as being the Hague cultivator because they were the first I had ever worked on, it being the second week that I was working there; the first cultivator that I worked on, is why I remember it so well.

Q. 16. In whose handwriting are the entries which have been copied into the record?

A. They are in Mr. Hague's handwriting.

Q. 17. What is the memorandum book mentioned by you?

A. It is a memorandum book that I made entries of cash receipts in of the different firms that I worked for.

Q. 18. Where is the book?

A. I have not got it with me, but I can produce it inside of two hours.

Q. 19. What would the memorandum book show if you had it here?

A. It would show the first pay I received from the Furst & Bradley Company.

(Counsel for defendant states, that, unless so desired by complainant the witness need not produce the book, but, if so desired, it will be produced to-morrow morning.)

(As advised, counsel for complainant does not care to have it produced, but reserves the right to call for it hereafter.)

Cross-Examination by Mr. French.

X Q. 20. Before going to work for the Furst & Bradley Manufacturing Company, where had you previously worked?

A. I worked for the Chicago & Northwestern Railroad Company's car shops, at Fortieth street, Chicago.

X Q. 21. When did you leave the car shops?

A. Monday morning, October 8, 1877.

X Q. 21. In what capacity did you commence to work for the Furst & Bradley Manufacturing Company?

A. As a machinist.

X Q. 23. Under what foreman did you work?

A. C. A. Hague.

X Q. 24. How long did you work as machinist under C. A. Hague?

A. About four years.

X Q. 25. After that what was your position?

A. Assistant foreman.

X Q. 26. What was the first work you did when you went to work for the Furst & Bradley Manufacturing Company, that you can remember?

A. My first work was on sulky-plow patterns.

X Q. 27. What next?

A. While I was working on patterns I did different experimental work in between; that is, along with the plow patterns.

X Q 28. Had you, before working for Furst & Bradley, ever worked on agricultural implements, and, if so, where?

A. I first worked on agricultural implements at Furst & Bradley's.

X Q. 29. During the four years while you were working as machinist, what was the general character of your work?

A. The first two or three months on pattern work and general experimental work.

X Q. 30. What do you mean by general experimental work? What did you experiment?

A. In getting up new implements, I had to make and put together the different parts as required.

X Q. 31. Furst & Bradley Manufacturing Company were engaged in making spring cultivators when you entered their employ, were they?

A. I do not know.

X Q. 32. During the time you were machinist, did you work on many pieces and patterns for cultivators, and do much experimenting therewith?

A. I worked on patterns and experimental work during the first three months.

X Q. 33. After the first three months, did you not do any work on patterns?

A. After the first three months Mr. Hague transferred me to working on a machine, or on a planer.

X Q. 34. How long did you work on the planer?

A. For about three years.

X Q. 35. During the time you were working on the planer, did you at any time make patterns or pieces for different machines, and experiment with them?

A. I did not.

X Q. 36. What was your work on the planer?

A. Planing drop-dies and trip-hammer dies, and general repairs on machinery.

X Q. 37. Then, you made general repairs on machinery in connection with the planer?

A. Such as had to be done on the planer.

X Q. 38. After that, what did you do?

A. I was promoted to assistant foreman, and looked after getting work out in the shop.

X Q. 39. Do you remember the time when you were promoted to the position of assistant foreman?

A. I do not remember the date.

X Q. 40. Was it in 1878?

A. No, sir.

X Q. 41. Was it in 1879?

A. No, sir.

X Q. 42. Was it in 1880?

A. No, sir.

X Q. 43. Are you positive it was not in 1880?

A. I ain't positive, but I don't think it was.

X Q. 44. Do you recognize in Defendant's Exhibit Hague No. 3 the parts of the spring device, or any of them, which you say you made for Mr. Hague?

A. I do. This piece marked *c*, and the piece marked B.

X Q. 45. Those pieces have the same form as the pieces made by you?

A. The piece B has the same form. The piece *c* I think is slightly changed.

X Q. 46. Have you taked recently with any one about this suit?

A. I have.

X Q. 47. With whom?

A. With Mr, J. H. Bradley and with Mr. Bond.

X Q. 48. When did you first talk with them or either of them about this suit and about giving testimony in this suit?

A. About two weeks ago.

X Q. 49. What do the words "star pattern" opposite the date October 8, on page 36 of the book already mentioned, refer to?

A. They refer to a sulky plow which they called the star sulky plow.

X Q. 50. What work did you do on that?

A. I finished up the axle patterns.

X Q 51. What do the letters "nsm i" opposite the date October 16 mean?

A. I do not remember what they refer to.

X Q. 52. Do you know what those letters mean?

A. I do not.

X Q. 53. What do the letters "fr" opposite the date October 19, mean?

A. Has reference to certain rake pattern.

X Q. 54. What do the letters "nsp" opposite the date October 22, mean?

A. I think it was on the new sulky plow.

X Q. 55. What do the letters "sdr" opposite the date October 25, mean?

A. The self-dump rake.

X Q. 56. Do you remember the kind of spring that was on one side of the machine which you made pieces for?

A. I do not remember the shape of it.

X Q. 57. Do you remember whether it was the U-shape?

A. I do not think it was the U-shape.

(The book produced by witness is not offered in evidence, but will be produced at the hearing, and for use of counsel if desired.)

X Q. 58. After you commenced work on the planer, did you work continuously on the planer, or did you sometimes do other work, such as making patterns?

A. I did not work continuously on the planer, but I done pattern work on the planer.

X Q. 59. Didn't you at times do pattern work without using the planer?

A. I do not know.

X Q. 60. Was the planer always run in the summer time?

A. It was not.

X Q. 61. When it was not running, what did you do?

A. I did general work, as it came along—working on the vise.

X Q. 62. Didn't you do other work besides working on the vise?

A. I did.

X Q. 63. As a matter of fact, you did whatever the foreman dealt to you to do?

A. Yes, sir.

X Q. 64. On page 60, of the book already mentioned, opposite the date, February 4, I find the words "cot pl pat;" what does that mean, and by whom was the work done?

A. It meant cotton planter patterns; done by myself.

X Q. 65. On page 152, opposite the date of April 10, I find the words "cul. pat." What do the words mean, and by whom was the work done?

A. They are cultivator patterns made by myself.

X Q. 66. On page 162, opposite the date, May 15, I find the same words.

A. Cultivator patterns made by myself.

X Q. 67. On page 176, opposite the date June 19, I find the same words. What do they mean?

A. They mean cultivator patterns made by me.

WILLIAM H. GAEDE.

Subscribed and sworn to before me, this 26th day of February, 1889.

[SEAL] HARRY T. JONES,
Notary Public.

By consent of counsel, the further taking of testimony is adjourned until to-morrow, 10 A. M., February 27, 1889.

Wednesday, February 27, 1889, 10 A. M. Met pursuant to adjournment. Present as before.

DEPOSITION OF J. H. BRADLEY.

J. H. BRADLEY, a witness produced on behalf of defendant, being first duly sworn, deposes and says, in answer to interrogatories to him propounded by L. L. Bond, Esq., as follows:

Deposition of J. H. Bradley.

Q. 1. State your name, age, residence and occupation?

A. J. Harley Bradley; secretary and treasurer of the David Bradley Manufacturing Company; age, 44; residence, Chicago.

Q. 2. How long have you been connected with the David Bradley Manufacturing Company?

A. Connected with the Furst & Bradley Manufacturing Company in 1872, and the name was changed in 1884 to David Bradley Manufacturing Company, and I have been connected with it up to this time.

Q. 3. What position did you occupy in the company during the years 1877 and 1879?

A. Secretary of the company.

Q. 4. Do you know Charles A. Hague?

A. I do.

Q. 5. When did he enter the service of the company?

A. In the fall of 1876.

Q. 6. Do you know of his making any improvements in cultivators during either of those years; if so, state generally what those improvements were, and when they were made?

A. I do. I think that the first experimenting with the cultivator was to put the spring on in 1877, immediately after he came to work for the company.

Q. 7. Describe, as accurately as you can, what those spring improvements were that he put on in '77?

A. The first experiment that I remember of his putting on was in the early part of '77—attaching the spring to the chain which we were then using to keep the plow from going into the ground too deep. The next was attaching a coiled spring to the frame, using a wrought-iron swinging frame above the spring in the frame to hold the plow out of the ground by carrying the beam.

Q. 8. Please look at the Hague patent, now shown you, No. 243,123, dated June 21, 1881, and say whether or not you recognize any of these improvements in that patent?

A. That is the experiment I referred to.

Q. 9. Why do you call it an experiment?

A. Because we had perfected a spring with an attachment for holding it up, and decided to put it on the market, and, when my attention was first called to the Hague device, he was experimenting to get it to work properly.

Q. 10. What time in 1877 was he at work on a cultivator like that shown in the Hague patent, and, in your answer, state how and by what means you put the date?

A. He was working on it in September and October, and I fix the date by the time book kept in his department, showing the work done by different mechanics in our employ on experimental work.

Q. 11. Please look at the book produced by Mr. Gaede, when on the stand, and say whether or not that is the book referred to by you in your last answer?

A. It is.

Q. 12. What is your recollection as to whether or not a completed machine was made during that year?

A. I was not in a position to know that. At that season of the year I was away from home more or less.

Q. 13. Did you at any time make any criticisms on the machine; if so, when did you make such criticisms, and what were they?

A. I criticised the construction of the spring and its attachment, in the spring of '79, claiming that it should be made in one piece, or in one complete attachment, so that we could send it out to take the place of other attachments which we had already put on the market, so that the ordinary dealer or farmer could attach it without trouble.

Q. 14. Was your suggestion followed up?

A. Not until after we had put the present Hague machine on the market for one season. We perfected the spring the next year, but the difficulty we run against in trying to make the improvement was to get a spring that would stand the test.

Q. 15. Please look at the patent to B. C. Bradley, No. 270,629, dated January 16, 1883, and state whether or not the cultivator in that patent represents the improvements made in the cultivator?

A. It does.

Q. 16. When were cultivators made in accordance with the Hague patent, put on the market for general use?

A. In the fall of 1879.

Q. 17. When were cultivators like that shown in the Bradley patent, put on the market for trade use?

A. In the fall of 1881, and spring of 1882.

Q. 18. When do manufacturing establishments usually put out or contract their machines for the coming season?

A. During the fall, winter and spring preceeding the year in which they are to be used; beginning with October and November, and continuing until May of the following year.

Q. 19. During the years 1877-8-9, or for other years, what was the practice of the company in regard to sending out changes or adopting them for machines put on the market?

A. It was customary to test a few of the machines at home, and send out a few in limited quantities the second year.

Q. 20. Mr. Hague was asked if he knew of any reason why the testimony in regard to this cultivator had not been taken before, either when an interference was declared with the Wright application, or in previous litigation under the Wright patent. I now ask you if you know why this testimony was not taken, and, if so, state why?

(Objected to becase the question does not correctly state the question asked Mr. Hague, and because incompetent.)

A. At the time of the interfence we expected be called upon to give this testimony, but the patent was allowed, and, as we understood it, the interference was discovered, and it was not necessary to furnish this testimony. In the Iowa case mentioned, we made an effort to have it taken, but failed to get word from Mr. Hague, although he agreed with me to call on our attorney, which I understand he did, but, for some reason, was called suddenly out of the city, and we could not get word to him in time, failing to find his address when wanted.

Q. 21. What has been your understanding, if you have had any, as to the necessity for taking this testimony?

(Objected to as incompetent.)

A. We never supposed it was necessary to have this testimony in the Iowa case, for the reason that we were working under patents of our own.

Q. 22. State whether or not, prior to the decision in the Iowa case, you had understood that your machine and the Wright machine were in substance alike?

(Same objection.)

A. We did not.

Cross-Examination, by N. French, Esq.

X Q. 23. In 1877, who were the officers of the Furst & Bradley Manufacturing Company?

A. Conrad Furst was president; David Bradley, treasurer; myself, secretary.

X Q. 24. Who was superintendent?

A. B. C. Bradley was known as such. He was elected superintendent.

X Q. 25. Where do these gentlemen now reside?

A. All in Chicago.

X Q. 26. What different kinds of implements were being made at your factory in 1877?

A. Walking-plows, riding-plows, cultivators, hay-rakes, harrows and field-rollers were the principal implements.

X Q 27. Did you make more than one kind of hay-rake, that you remember?

A. Yes, sir; two kinds.

X Q. 28. Did you make one or more kinds of riding-plows?

A. Yes, sir. We made what was known as the sulky-plow and the gang-plow.

X Q. 29. What kind of cultivator did you make at that time?

A. We were making what was known as a combined riding and walking cultivator, a wheel walking-cultivator, a five and nine tooth walking-cultivator without wheels.

X Q. 30. Did any of the cultivators which you made in fall of 1877 and winter of 1878 have such spring attachment?

A. Yes, sir. Our walking wheeled-cultivator had a spring attachment for carrying the beam at a given depth when at work in the field, and the attachment was so arranged that, by throwing the shovels out of the ground, they would be held up.

X Q. 31. Was that what has been called the Bicknell device?

A. Yes.

X Q. 32. When did you first commence making cultivators with that device?

A. During the cultivator season of '77.

X Q. 33. What do you mean by the cultivator season of 1877?

A. I mean by the cultivator season the time of year when the corn was in shape to be cultivated.

X Q. 34. When did you first put on the market cultivators with the Bicknell device?

A. In the fall and winter of 1877 and the spring of 1878.

X Q. 35. Did you make those cultivators with that device in large quantities?

A. No, sir.

X Q. 36. How long did you continue selling them on the market?

A. In 1878; during the season of 1878.

X Q. 37. Did you put any on the market in the fall of 1878 for the cultivator season of 1879?

A. No.

X Q. 38. How did you advertise the cultivator with this spring attachment; did you call it patent spring attachment?

A. Yes, sir.

X Q 39. I call your attention to your circular for 1878, marked "Defendant's Exhibit Hague No. 2," or the circular issued for the fall trade of 1878, and ask you to look and see if you are not mistaken when you say you did not put on the market any cultivators with the patent hang-up attachment for the cultivator season of 1879?

A. I don't think I am.

X Q 40. I find here the words, "walking cultivator, wood-beam, five and a half inch shovels, and patent hang-up attachment;" what do these words in the circular just mentioned refer to?

A. They refer to those particular attachments. We got so many of the few that we did send out back that, when we came to settle with our customers in the fall of 1878, we discontinued sending them out, but we may possibly have sold a very few.

X Q. 41. These machines came back, and the settlements were made after the printing of these cuts, I suppose?

A. Yes, sir.

X Q. 42. What other cultivator, if any, with spring attachments, were you making in the fall of 1877 for the cultivator season of 1878?

A. Not any.

X Q. 43. Didn't you make any cultivators in that fall with the beams suspended by chains from the back part of the tongue, having a spring connected with the chain?

A. We made cultivators for several years with chains as stated in the question, and were called upon to make one with a spring, and, I think, did make a few, but have no record showing the actual shipment.

X Q. 44. You have looked at your books, have you, to see what you were making in 1877?

A. Yes, sir.

X Q. 45. Please look at the cut marked "Defendant's Exhibit Hague No. 3," and state whether it correctly shows the cultivator which you first put out for the cultivator season of 1880.

A. Yes, sir.

X Q. 46. How long did you continue making that cultivator and putting it on the market?

A. We manufactured it for our trade in the year 1880, and a portion of our trade in 1881.

X Q. 47. In what month and year was the first cultivator, such as is shown in your circular, shipped out from your factory?

A. The first shipped to customers, on our books, was in December, 1879.

X Q. 48. Can you trace any of these cultivators as having been shipped to any one else during this time?

A. No, sir.

X Q. 49. Then, if I understand you correctly, the first cultivator, having what has been called the Hague spring, which was shipped from your factory to any one at all, was shipped in December, 1879?

A. I don't say that. I do say that the first one shipped complete, ready for the market, out of a large quantity, was in December, 1879. It is customary with us, and has been for years, to send out samples of improvements we were making, without keeping any particular record, especially where they were attachments; so that it would be impossible for me to say that December was the first shipment.

X Q. 50. When were these cultivators made that you say were shipped out for the cultivator season of 1880?

A. The cultivators themselves might have been made the previous year; the spring was manufactured, probably, during the months of August and September.

X Q. 51. Have you examined your books to find when the spring and spring attachments were made?

A. Yes, sir.

X Q. 52. They show, do they, that you commenced in August or September, or that it may have been later that you commenced?

A. We might have made those springs prior to the date named, as all of our experimental and sample springs, or most of them, were made in our own factory, while the springs purchased for our season's trade of '80, the order was placed in November, 1879, for the springs.

X Q. 53. Whenever you send out sample machines, or sample attachments, for the purpose of having the same tried, you always write to the person to whom sent, explaining what you believe to be the merit of the new machine, or attachments, and asking for his opinion, do you not?

A. No, sir. We frequently sent to a farmer in the vicinity of the city, or he has happened in the office, and we called his attention to these improvements, and sometimes let him take them, and, if we did not hear of any complaints, took it for granted that they were all right, in connection with what experimenting we had already done ourselves. This is more apt to be the case where an attachment was set up, than with a complete machine or implement.

X Q. 54. Where the person whom you desired to receive a new machine or attachment did not live near the factory, and where you had no talk with him about the matter, and where the machine or attachment was shipped in the customary way, by freight or express, did you not write a letter to the person to whom such machine or attachment was sent?

A. Usually, unless made by a traveling man.

X Q. 55. In such case your shipping book would show the shipment, would it not?

A. Yes, sir.

X Q. 56. If I understood you correctly, you examined your books and are unable to find any trace of any of these machines, or the Hague spring attachment, being shipped prior to December, 1879.

A. Yes, sir.

Recess until 2 P. M.

2 P. M. Resumed after recess.

X Q. 57. Your company has always kept books, has it not, in which its business letters were copied?

A. Yes. Some times we have after certain dates destroyed them.

X Q. 58. Have you destroyed the books containing copies of the letters written in 1877, 1878 and 1879?

A. I think not.

X Q. 59. When did you last see Charles A. Hague?

A. The day he testified in this case.

X Q. 60. When did you see him prior to that time?

A. The morning of the day before.

X Q. 61. When, prior to that time?

A. I think it was in October in the Exposition Building in 1888.

X Q. 62. When did you see him prior to that time?

A. In the Union League Club about a month before our Iowa suit.

X Q. 63. Do you mean the month before the Iowa suit was tried on final hearing?

A. Yes, sir. I don't remember of meeting him for a year before that time.

X Q. 64. According to your recollection, was it more than a year before that time when you met him?

A. I met him in the summer before that time. I met him at the Union League Club. I did not meet him to speak with him.

X Q. 65. That was in the summer of 1887?

A. Yes, sir.

X Q. 66. When did you next meet him before that time?

A I used fo see him on the street frequently when going from his office, but not to speak with him. We talked a minute, but not so as to remember it. I should not have remembered this meeting at the exposition if it had not been that I run half the length of the building to tell him that Mr. Bond wanted to see him about this cultivator case.

X Q. 67. And this time, when you saw him at the Exposition Building last October, or about then, was the first time you spoke to him about taking this testimony in regard to this invention, was it not?

A. No, sir; I mentioned it at the Union League, and requested him to call on our attorney, which I understood he did.

X Q. 68. To which meeting at the Union League do you refer?

A. In the spring or summer of 1888.

X Q 69. Did you have any other meeting with him; talk to him about taking this testimony, and if so, when?

A. No, except while he was in our employ, and at the time of the interference in our patent or application with the Wright.

X Q. 70. Did you assist Mr. Hague to get an order for pumps, on behalf of the company he traveled for, for Chicago, or any of the villages near Chicago.

A. No, sir; except to introduce him to an attorney.

X Q. 71. When was that?

A. That was in the fall of 1888.

X Q. 72. What company did he represent at that time?

A. The Worthington Company.

X Q. 73. How long had he represented the Worthington Company at that time;—give it as near as you can?

A. I don't know. I know it was more than sixty days, but I do not know when he left Blake & Company, and when he went there. I had no reason to know.

X Q. 74. Please state, in a general way, the nature of your duties as secretary of the Furst & Bradley Manufacturing Company from 1877 to 1881.

A. As secretary of the company I had charge of the sales, the employing of the men, that is, outside of the laborers and ordinary mechanics, purchasing of goods, sale of goods, and the general correspondence done at home. During the time you mentioned I was absent from Chicago from April 5, 1878, until October 5, 1878, in California.

X Q. 75. How was it in the fall of 1877?

A. Except to attend the St. Louis Fair, I was not absent for a week during the seven years previous.

X Q. 76. Who had charge of the manufacture of goods from 1877 to 1881 in the factory?

A. B. C. Bradley, and Charles A. Hague as his assistant.

X Q. 77. Since you have been with the Furst & Bradley Manufacturing Company and the David Bradley Manufacturing Company, have there been many changes in the machines made at the factory, the adoption of new machines and the improvement of old machines?

A. Yes, sir.

X Q. 78. Has there been a constant experimenting with new machines and improvements in old machines?

A. Yes, sir.

X Q. 79. Are you able to remember when new machines were adopted and the changes made in the old machines, so as to give the time when the change took place in each case?

A. Yes, sir. Where radical changes and those that necessitated a great deal of experimenting with to perfect, I think I could say without question that I could remember it. I might not be able to fix the date without referring to books and other matter that would naturally be in the factory. There are always a number of minor

changes that are sometimes thought to be improvements in the factory that one would not be apt to remember. Usually, important changes are not made of this kind, however, without there being some demand.

X Q. 80. Did you expect to be a witness in the case a month ago?

A. No, sir. I supposed the deposition which I had already made would do in this case.

X Q. 81. Do you refer to your affidavit in this case used in the application for a preliminary injunction?

A. Yes, sir.

X Q. 82. Is this a copy of the affidavit you refer to?

A. Yes, sir.

(Counsel for complainant asks the notary to identify the same, by marking it "Affidavit of J. Harley Bradley, in case of *Eagle Manufacturing Company* v. *David Bradley Manufacturing Company.*")

X Q. 83. A month ago, were you able to recollect when Mr. Hague first ezperimented with his spring device?

A. Yes, sir; by fixing the time at the year he came there. I could not have fixed the date, but I would remember that it was the year he came there, or during the next spring, for the reason that my attention was particularly called to everything he done at that time, for the reason that he was a new man, and took the place of one who had been in the employ of the company for a great while, and that I discharged contrary to the wishes of some of the officers of our company, and, very naturally, anything that Mr. Hague undertook to do was criticised and called up much more prominently than any other man in our company at that time, and I was particularly anxious, my having told him, in taking the position he did, that he should get as much credit for making improvements as possible.

X Q. 84. When did you first see the spring, such as is shown by the drawings of the Wright patent in suit?

A. I do not remember of having ever seen it until after the patent was issued.

X Q. 85. Did you see it in the year 1879?

A. No, sir.

X Q. 86. Did you go to any fair in 1879?

A. At St. Louis.

X Q. 87. Did you look at the agricultural implements on exhibit there in 1879?

A. I probably did. I usually walked through the different exhibits. I spent most of the time looking after our own.

X Q. 88. Are you positive that you did not see it at the St. Louis fair in 1879?

A. I am.

X Q. 89. Are you positive you did not see it any time in 1879?

A. I have no remembrance of ever seeing it until after the patent was issued.

X Q. 90. After you commenced the sale of cultivators with the Hague spring device, did you continue selling cultivators with that device, and with the chain shown in the patent to P. C. Bradley?

A. Yes, sir.

X Q 91. How many did you sell for the cultivator season of 1880?

A. Our first order for springs in 1879 was for three thousand sets of springs. I don't know whether we made any more that year or not.

X Q. 92. Did you make more or less the next year?

A. Well, those are figures I could not tell without looking up. I think we made as many or more.

X Q. 93. Has Charles A. Hague any interest in the David Bradley Company, or has any member of his family any such interest?

A. No, sir.

Re-Direct Examination, by L. L. Bond, Esq.

R-d. Q. 94. You say that you ordered three thousand sets of springs in 1879 for the Hague cultivators; would you have ordered that many if the Hague cultivator of 1877 had been the only one made or tried?

(Objected to as being incompetent, as calling for the opinion of the witness, and as calling for an opinion based upon the assumption that he had seen the Hague cultivator of 1877, and, in fact, the witness has testified that he had not seen it.)

A. No, sir. It has never been customary with our people to put out any large quantity, and it certainly would not have happened in this case after having received a black eye with the Bicknell machine, of which we only put out a few hundred. After our experience with the Bicknell we were very slow to put out any spring.

R-d. Q. 95. Have you anywhere stated, or, if so, have you intended to state, that you did not see the Hague machine of 1877?

A. No, sir; if I did, I misunderstood the question.

R-d. Q. 96. State what the facts are in regard to seeing or not seeing this machine?

A. I did see the Hague spring when they were experimenting in the factory, but did not go into the field with them, but understood, when they returned in the evening from the trial, the spring worked satisfactorily except the adjustment.

R-d. Q. 97. When does a machine cease to be an experimental machine at your factory?

(Objected to as incompetent, as calling for the opinion of witness.)

A. We consider a machine as experimental during the time we are perfecting it, and up to the time that we produce them in quantities to supply the trade.

R-d. Q. 98. In direct interrogatory 12, you were asked, and answered as follows:

"Q. 12. What is your recollection as to whether or not a completed machine was made during that year?"

"A. I was not in a position to know that. At that season of the year I was away from home more or less."

As this question and answer has led to a misunderstanding, please explain what you meant?

A. I wish to be understood, in answer to that question, that I did not see a cultivator with two complete spring attachments at that time, as the machine I saw had only one of the Hague springs on one side of the cultivator and a Bicknell attachment on the other side; when the completed machine was tested, after I had seen the experimental one, I was not present.

J. HARLEY BRADLEY.

Subscribed and sworn to before me, }
this 27th day of February, 1889. }

[SEAL.] HARRY T. JONES,
Notary Public.

Affidavit referred to in answer to question 81, and requested to be marked as follows:

AFFIDAVIT OF J. HARLEY BRADLEY,

in case of *Eagle Manufacturing Company* v. *David Bradley Manufacturing Company.*

HARRY T. JONES,
Notary Public.

UNITED STATES CIRCUIT COURT,
NORTHERN DISTRICT OF ILLINOIS.

Eagle Manufacturing Company,
v.
David Bradley Manufacturing Company. } *In Equity.*

STATE OF ILLINOIS,
COUNTY OF COOK. } ss.

J. HARLEY BRADLEY, being duly sworn, on oath deposes and says that he is the secretary and treasurer of the defendant corporation; that the Furst & Bradley Manufacturing Company, to which company this defendant succeeded, commenced the manufacture and sale of cultivators of the form shown in the Hague patent in and for the season of 1879, and of the form shown in the Bradley patent, which is the one now used, in the season of 1880; that the defendant and its predecessors, as affiant believes, did more to introduce this kind of cultivators to the public, and to

make them popular, than the complainant did; that the defendant owns the said Hague and Bradley patents, and the spring combinations used by them are covered by claims in said patents.

That the Wright form of spring and the Wright combination, shown and claimed in complainant's patent, are a positive and actual injury to a cultivator, and its use has been abandoned by the complainant, and by all who have attempted to make them.

That the defendant company is abundantly able to respond to, and pay, any decree that the complainant may obtain against it.

That, prior to the commencement of this suit, the building of a machine by Kissell, at Springfield, Ohio, was wholly unknown to this defendant.

That the patent of 1869, to Henry N. Dalton, was known prior to the determination of the Iowa suit, and said patent was relied on as one of the defenses to said suit. That it could not be known, at the hearing of the Iowa suit, that the court would not understand the operation of the machine shown and described in said patent.

That it was not known to this defendant that the said Dalton had ever made spring plows, or even that he was now living.

That the Iowa suit was commenced December 7, 1887, and a motion for preliminary injunction was made January 13, 1888, and the injunction was refused on condition that the defendant in said suit give bonds, and, as affiant is informed and believes, upon the further condition that the case be ready for hearing at the May term of said court, which said term commenced on the eighth day of May, so that but very little time was given for the preparation of the defense in said cause, which was heard at said term, and on the first or second day thereof.

That it has been common, for at least twenty years, to the knowledge of this affiant, to use cultivator plows of the mould-board pattern in place of shovel plows for cultivators.

J. HARLEY BRADLEY.

Subscribed and sworn to before me, this 2d day of July, A. D. 1888.

[SEAL] HARRY T. JONES,
Notary Public.

STATE OF ILLINOIS, }
COUNTY OF COOK. } ss.

I, Harry T. Jones, a notary public in and for the county of Cook, state of Illinois, do hereby certify that the foregoing depositions of William S. Bates, John F. Packer, Charles A. Hague, Byron C. Bradley, William H. Gaede and J. Harley Bradley, were taken before me at the times and place therein specified, pursuant to notice hereto attached; that the parties to the said cause were present at the taking of the same, complainant by its counsel, Nathaniel French, Esq., and George H. Christy, Esq., and defendant by its counsel, L. L. Bond, Esq., as therein appears; that, before deposing, the said William S. Bates, John F. Packer, Charles A. Hague, Byron C. Bradley, William H. Gaede and J. Harley Bradley were each by me duly sworn to tell the truth, the whole truth, and nothing but the truth, in the cause wherein The Eagle Manufacturing Company is complainant, and The David Bradley Manufacturing Company is the defendant, now pending in the Circuit court of the United States for the Northern district of Illinois; that their depositions were reduced to writing from their statements by Ella Nemett, under my direction, and the same duly subscribed and sworn to by them, as therein appears.

And I do further certify that I am neither attorney nor of counsel for any of the parties in said depositions or caption named, and am in no wise interested in the result of said cause.

In testimony whereof, I have hereunto set my hand and affixed my notarial seal, this 27th day of February, A. D. 1889.

[SEAL.] HARRY T. JONES,
Notary Public.

CIRCUIT COURT OF THE UNITED STATES, SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

Eagle Manufacturing Company
v.
The Moline, Milburn & Stoddard Company. } *Equity.*

BILL.

To the Honorable the Judges of the Circuit Court of the United States in and for the Southern District of Iowa:

The Eagle Manufacturing Company, a corporation organized under the laws of the state of Iowa, and existing in the state of Iowa, and citizen of said state, brings this bill against the Moline, Milburn & Stoddard Company, a corporation organized under the laws of Ohio, but having an office and permanent place of carrying on its business at Des Moines, Iowa, and a resident of the Southern District of Iowa.

And thereupon your orator complains and says that Edgar A. Wright was also the true, original and first inventor of a certain new and useful improvement in cultivators not known or used before his invention thereof, and not, for more than two years prior to the date of his application for a patent therefor, in public use or on sale.

And your orator further shows unto your Honors, that the said Edgar A. Wright, so being the inventor of said improvement, and being a citizen of the United States aforesaid, made application to the proper department of the government of the United States for letters patent, in accordance with the then existing laws of Congress, and having duly complied in all respects with the conditions and requisitions of said laws, on the 7th day of June, 1881, letters patent of the United States, No. 242,497, signed, sealed and executed in due form of law, for his invention, were issued and delivered to the aforesaid Edgar A. Wright, whereby there was secured to the said Edgar A. Wright and to his heirs, legal representatives and assigns, for the term of seventeen years from the 7th day of June, 1881, the full and exclusive right of making, using and vending to others to be used, the said improvement in cultivators.

And your orator further shows that a description of specification of the aforesaid improvement was given in the schedule to the aforesaid letters patent annexed, accompanied by certain drawings referred to in said last mentioned schedule, and forming part of said letters patent. The said letters patent, and the said specification thereto annexed, (which, or an exemplified copy of which, your orator will produce, as your Honors may direct), were duly recorded in the patent office. And your orator further shows that said letters patent were duly transferred and assigned by said Edgar A. Wright to your orator on June 13, 1881, whereby your orator became and is the owner of said letters patent. The said assignment was duly recorded, and the same, or a certified copy thereof, is ready in court to be produced.

And your orator further shows that it has extensively applied the said several improvements to practical use, and has been, and but for the infringement hereinafter complained of and like infringements by others, your orator would still be in the undisturbed possession, use and enjoyment of the exclusive privileges secured by the said letters patent, and in the receipt of the profits of the same.

And your orator further shows unto your Honors, as it is informed and believes, that the said defendant herein named, well knowing all the facts hereinbefore set forth, is now selling spring cultivators, in some parts thereof substantially the same in construction and operation as in the said letters patent mentioned, the exclusive right and privilege to make and use which, and vend the same to others to be used, is thus by law vested in your orator.

And so it is, may it please your Honors, that the said defendant, as your orator is informed and believes, without the license of your orator, against its will and in violation of its rights, has sold and intends to continue still to sell the said improvements within the Southern District of Iowa and elsewhere in the United States, and refuses to pay to your orator any of the profits which it has made by such unlawful manufacture and use, or to desist from the further infringement of said recited letters patent: all of which acts and doings are in violation of the exclusive rights and privileges, so as aforesaid vested in your orator under and by virtue of said recited letters patent, and are contrary to equity and good conscience, and tend to the manifest injury of your orator in the premises as aforesaid.

And your orator prays that the said defendant may answer the premises, but not under oath, and that it may be decreed to account for and pay over the income or profits thus unlawfully derived, or which might have been derived from the violation of the rights of your orator as aforesaid, and your orator prays that your Honors, upon entering of the decree in favor of your orator against said defendant for infringement, as above prayed for, may also proceed to access, or cause to be accessed, under your directions, as well as

the profits or income to be derived therefrom, to be accounted for as aforesaid, as also, in addition thereto, the damages sustained by your orator by reason of such infringement, and that your Honors may increase the actual damages so assessed to a sum equal to three times the amount of such assessment, under the circumstances of the wilful and unjust infringement committed by said defendant as hereinbefore set forth; and further, that the said defendant may be restrained from any further violation of the rights of your orator as aforesaid, your orator prays that your Honors may grant a writ of injunction issuing from, and under the seal of this Honorable court, or issued by one of your Honors, perpetually enjoining or restraining the said defendant, its clerks, attorneys, servants, agents and workmen, from any further construction or sale, or use in any manner of said patented improvements, or any parts thereof, in violation of the rights of your orator as aforesaid And your orator further prays that a provisional or preliminary injunction be issued, restraining the said defendant from any further infringement of said recited letters patent, pending this cause, and it prays for such other relief as the equity of the case may require, and to your Honors may seem meet.

May it please your Honors to grant unto your orator not only a writ of injunction conformable to the prayer of this bill, but also a writ of subpœna of the United States of America, directed to the said the Moline, Milburn & Stoddard Company, commanding it on a day certain, therein to be named, to appear and answer unto this bill of complaint, and to abide and perform such order and decree in the premises as to the court shall seem meet, and may be required by the principles of equity and good conscience.

NATH. FRENCH,
Solicitor for Complainant.

GEO. H. CHRISTY,
Of Counsel.

UNITED STATES OF AMERICA. }
SOUTHERN DISTRICT OF IOWA. } ss.

Before me, the subscriber, duly authorized to administer oaths, personally came E. P. Lynch, president of the Eagle Manufacturing Company, the complainant in the foregoing bill named, who, being duly sworn, deposes and says that so far as the statements herein contained are within his own knowledge, they are true, and so far as they are derived from the information of others he verily believes them to be true. And he further says that he verily believes the said Edgar A. Wright, in said bill named, to be the original, true

and first inventor of the new and useful improvement which is described in said letters patent granted to Edgar A. Wright, and mentioned in the foregoing bill. And further, that the said deponent verily believes that the title of the said complainant is as set forth in said bill.

E. P. LYNCH.

Sworn to and subscribed before me, this 4th day of December, A. D., 1887.

[NOTARIAL SEAL] NATH. FRENCH,
Notary Public, Scott Co., Ia.

REPLICATION.

UNITED STATES CIRCUIT COURT, SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

The Eagle Manufacturing Company,
v.
The Moline, Milburn & Stoddard Co. } *In Equity.*

The replication of the Eagle Manufacturing Company, complainant, to the answer of David Bradley & Company, defendant.

The repliant, saving and reserving to itself, all and all manner of advantage of exception to the manifold insufficiencies of the said answer, for replication thereunto says that it will aver and prove its said bill to be true, certain and sufficient in the law to be answered unto; and that the said answer of the said defendant is uncertain, untrue, and insufficient to be replied unto by this repliant; without this that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true; all which matters and things this repliant is and will be, ready to aver and prove, as this Honorable court shall direct; and humbly pray, as in and by its said bill it has already prayed.

NATH. FRENCH,
Solicitor for Complainant.

GEORGE H. CHRISTY,
Of Counsel.

Depositions and other evidence taken pursuant to agreement, at Chicago, March 1, 1888.

It is stipulated by the parties hereto, that the deposition of G. Watson French, taken in the case of the *Eagle Manufacturing Co.* v. *David Bradley & Company*, pending in the United States Circuit court, for the Southern district of Iowa, Western division, may be considered in evidence in this case, and a copy thereof may be written out and filed in this case at any time, to complete the record; continuing the said deposition the witness is asked the following questions on direct examination, by Nathaniel French:

Deposition of G. Watson French.

Q. 1. Is the defendant in this case, the Moline, Milburn & Stoddard Company, engaged in business in the state of Iowa, and if so, where, and in what business?

A. They are engaged in the sale of agricultural implements, in Des Moines, Iowa.

Q. 2. If said company sells cultivators, please state what make of cultivators they sell, if you know, and when they commenced selling the same?

A. They sell the cultivators manufactured by the Moline Plow Company, of Moline, Illinois, and have sold the same previous to December 15, 1887, in the state of Iowa.

Q. 3. How long previous, do you know?

A. I do not know.

Q. 4. I will ask if you procured one of the cultivators sold by the defendant?

A. I did.

Q. 5. Have you that cultivator yet?

A. I have.

Q. 6. Did you ever show that cultivator to Cyrus Kehr?

A. Yes.

Q. 7. You may look at the cut of cultivators marked "Exhibit, Cut of Defendant's Cultivator," and state whether or not it is a correct representation of their cultivator?

A. It is.

(The cut is offered in evidence).

Cross-Examination by Mr. Bond.

Q. 8. Have you knowledge or information as to when the defendants commenced selling machines in Iowa?

A. I do not know when the defendants commenced selling machines in Iowa, except that it was previous to December 15th.

Q. 9. You would have known it, would you not, if they had in any manner damaged or injured the sale of your machines?

A. The cultivator made by the Moline Plow Company has been sold in Iowa for several years, but by whom I am unable to positively say.

Q. 10. As a matter of fact, the Moline Plow Company, either by itself, its agents, or representatives, sold the same machine in Iowa as early as 1882, did they not?

A. Either in 1882 or 1883.

Q. 11. Their works are just across the river from you, are they not—that is, the works of the Moline Plow Company?

A. Yes.

Re-Direct Examination.

Q. 12. How long prior to the time you showed this machine to Mr. Kehr, did you obtain it?

A. From one to three weeks, as definitely as I can state it.

The following is the deposition of G. Watson French, in the suit of the *Eagle Manufacturing Company* v. *David Bradley & Co.*, offered herein under the foregoing stipulation:

Direct Examination by Judge French.

G. WATSON FRENCH, being first duly sworn on behalf of complainant, testified as follows:

Q. 1. State your name, age, residence and occupation?

A. G. Watson French; 30 years old; Davenport, Iowa; Vice President of the Eagle Manufacturing Company.

Q. 2. What is the capital stock of the Eagle Manufacturing Company, and in what business is it engaged?

A. $200,000; manufacturer and selling of agricultural implements.

Q. 3. Is there any implement of which you sell especially large numbers?

A. Yes, cultivators.

Q. 4. Do you sell cultivators with springs which act with increasing effect to lift the beams, as the beams are raised?

A. Yes.

Q. 5. Have you ever made, and sold in the regular course of your business to your dealers and customers, spring cultivators of the particular kind shown in the drawings of the patent to E. A. Wright, number 242,497, I mean by that, cultivators with springs of that particular form and construction; and if you have sold such cultivators, as before stated, please mention to what extent.

A. We have made and sold about 15 to 20 thousand of said cultivators, to our regular customers in the course of our regular business.

Cross-Examination by Mr. Bond.

Q. 6. During what years or seasons did you make and sell cultivators containing the spring shown in the complainant's patent, 242,497?

A. From 1879 to 1885.

Q. 7. Why did you quit?

A. Our superintendent decided that a spring acting on a pipe-box with projecting arm was more desirable to our company, and he changed it accordingly.

Q. 8. So far as you know, were cultivators having on then the Wright spring satisfactory to the firms that used them?

A. Yes.

Q. 9. Did you have any complaint, or know of any firm taking them off?

A. No.

Q. 10. What form of spring are you now using on your cultivators?

A. The form shown in the circular which I give now to the notary to mark for identification, marked "Circular, Golden Eagle Cultivator, G. W. French's deposition."

Q. 11. Do you consider your present machine a better one than the one shown in the Wright patent?

A. Yes.

Q. 12. Do you make any other style or kind of cultivator than the one shown in the circular just produced by you?

A. Yes, we make a tongueless cultivator and a combined riding and walking cultivator.

Q. 13. How have the sales of the lifting-spring cultivators, like those of the Wright patent, and of the circular, compared or averaged with the sales of the other forms of cultivators made and sold by your company?

(Objected to as immaterial, and not cross-examination.)

A. The sales of the spring cultivator have increased much more largely than the cultivators we made without springs.

Q. 14. How do they average as to numbers made and sold?

A. I couldn't give the exact proportion without having our books to examine.

Q. 15. Give your best estimate?

A. Ninety-five per cent of all the cultivators that we have made in the past three years have been spring cultivators.

Q. 16. How was it before you adopted the new form of spring?

A. About the same, for the two years preceding the adoption of the new spring. The sale of cultivators without springs has been growing less and less every year.

Q. 17. Do you know a man by the name of Koutz living in Scott county, Iowa?

A. Yes.

Q. 18. Do you know of his having any trouble with the Wright spring?

A. No.

Q. 19. Do you know whether or not, your company sent him any extra springs?

A. Not that I know of.

Q. 20. Do you know whether or not he had a cultivator with the Wright spring on it?

A. He bought one from us.

Q. 21. Do you know anything of the history of that machine after it passed into his hands?

A. Some attorneys went to see the cultivator, tried to get Mr. Koutz to testify that the springs were of no benefit; that is all I know of it.

Q. 22. Don't you know that the reason he gave for his refusal was that he was a friend of the company; that they had treated him well, and he did not want to hurt them?

A. No, sir.

Re-Direct Examination.

R-d. Q. 23. While your company was engaged in making cultivators with springs, such as are shown in the drawings of the patent mentioned, did the sale of cultivators with such springs increase or decrease from year to year?

A. They increased each year.

Re-Cross-Examination.

R-X Q. 24. Cultivators of this class were introduced by W. T. Brown, of Ohio, Deere, of Moline, and possibly others before 1879, and from that date down have not all manufacturers been advertising and canvassing for the sale of spring cultivators, and is not this the reason for increasing sales?

A. Cultivators sold by Brown, of Ohio, and Deere & Company in competition with our cultivators, did not have a spring with an increasing lifting effect and depressing effect, which our cultivator had, and which rendered them very popular with the trade. While the increase of cultivators may be due to the development in the country and the improvement in them, the increase in the sale of our cultivator we consider was due largely, if not entirely, to our peculiar spring.

R-X Q. 25. Was not the spring which you adopted in 1885 a spring then well known to the trade?

A. No.

R-X Q. 26. You know of the use of the spring shown in your circular exhibit before you used it on your machines, did you not?

A. Cultivators had been made previous to 1885 which had a long, upright coil spring; our spring consists of two springs to each gang, one, the long coiled spring, the other a short auxiliary spring. The short auxiliary spring was an invention new to the trade.

R-X Q. 27. Of what use is the short spring?

A. To suspend the drag-bar while in operation in the ground, to regulate the depth of plowing and to assist in raising the gangs.

R-X Q. 28. Is there any reverse or down pressure in the machine of the circular, when the shovels are in the ground?

A. It can be so adjusted as to give a down pressure by means of the long coiled spring.

R-X Q. 29. Is it?

A. It is done so at the will of the operator in the field.

R-X Q. 30. The lifting of the beam is accomplished by means of the long spring, is it not?

A. The long spring raises the beam and suspends it; the short spring can be so adjusted as to assist in raising the beam part of the way; when the greatest force is exerted by the operator, it acts.

R-X Q. 31. The machine shown in the circular has, altogether, four springs, has it not?

A. Yes.

R-X Q. 32. Do you understand that there are four springs in the machine shown in the Wright patent?

A. No.

(Complainant offers in evidence, Letters Patent 242,497, dated June 7, 1881, granted to E. A. Wright, and marked "Exhibit Complainant's Patent.")

It is here stipulated and agreed that the complainant is the owner of this patent.

Deposition of Cyrus Kehr.

Cyrus Kehr, being first duly sworn on behalf of complainant, testified as follows:

Direct Examination by Mr. French.

Q. 1. State your name, age, residence and occupation.

A. Cyrus Kehr; age, 31 years; residence, Chicago, Illinois; occupation, solicitor of patents and mechanical expert.

Q. 2. State generally, what opportunity you have had for familiarizing yourself with mechanical questions and your experience in dealing with such questions, particularly as they arise in connection with patents for inventions?

A. During the last eight or nine years, I have devoted myself to study of mechanics and patent law, and to the work of soliciting patents, and have, during said time, testified frequently as expert in patent cases.

Q. 3. Have you examined and do you understand complainant's patent, No. 242,497?

A. I have examined said patent and understand the same.

Q. 4. Have you examined and do you understand the construction of a certain cultivator shown to you last December at Davenport, Iowa, by G. Watson French, and said to be a cultivator sold by the defendant?

A. I have examined said cultivator, and it was shown to me by G. Watson French at the place mentioned. I understand the construction of said machine.

Q. 5. When was that cultivator shown to you by G. Watson French?

A. On, or a day or two preceding, December 10, 1887.

Q. 6. Please look at the exhibit marked "Exhibit, Cut of Defendant's Cultivator," and state whether it is a substantially correct representation of said cultivator?

A. I think it is.

Q. 7. Directing your attention to the complainant's said patent and the invention shown and described therein, and referred to in the first four claims thereof, please state what you understand to be the invention described therein, and whether or not you find substantially the same invention in the cultivator shown by said exhibit, and give your reasons for any opinion you may express?

A. I understand said invention to consist in the combination of a cultivator frame, pivoted drag-bar or beam, and a spring, said combination being characterized by the fact that said spring is so incorporated with the cultivator as that, when the beam ascends from the working position, the bearing or connection of the spring is so changed or shifted as to produce a maintained or increased lifting effect upon the plow beam, as the latter ascends.

The inventor in his patent sets out that this combination may be effected in a variety of ways. In his drawings he shows one particular form with a modification. But in speaking of said drawing he says:

"The accompanying drawings illustrate one manner of embodying my invention."

This statement I take to be an intimation that he has other forms in view.

On page 2 of the specification, at line 120, he says:

"Among other arrangements which may be substituted for that shown, is that of having a radius bar or link introduced between the spring and beam as a substitute for the curved spring and roller."

And again, at line 99 on the same page, he says:

"While it is believed that the form of spring represented in the drawing is preferable to all others, the invention includes, as before stated, any spring so combined with the beam or its equivalent that a greater or stronger lifting force or effect is exerted upon the beam when the latter is above the operative position than when it is in use; or, in other words, the invention includes any and all beam-lifting springs, the effect of which is lessened or avoided when the beam descends to an operative position.

Having in mind these statements and suggestions, I find on making an examination of said defendant's cultivator that it contains the frame, the drag-bar pivoted thereto, and a lifting spring combined in a manner coming within the explanations and suggestions of complainant's patent; that said spring operates to raise said drag-bar in substantially the same manner as set forth in complainant's patent.

The frame in defendant's cultivator is almost identical in form with that shown in figure 1 of the drawings of complainant's patent. It has almost identically the same form of tongue, arched axle and braces. The plow beam or drag-bar is also almost identical in form. The plow beam in defendant's cultivator is pivoted not directly to the axle, but immediately in front of it, to what is termed a pipe-box or false axle, while in figure 1 of complainant's drawing the plow beam is shown as pivoted directly to the axle. This difference I do not regard as material. The operation is the same. The coupling in each case forms a pivot upon which the plow beam turns is moving to or from the working position. From the inner end of defendant's plow beam there ascends a short arm, from the upper end of which there ascends a rod. The lower end of said rod is jointed to the upper end of the arm rising from the plow beam, while the upper end of said rod rests in a guide projecting from the arch of the axle. A coiled spring surrounds said rod and rests against the guide above and against a shoulder below. Said spring is an expansion spring, pressing against said guide and shoulder. In saying that said short arm rises from the inner end of the plow beam, I regard the fork which surrounds the pipe-box as a continuation of the beam.

When said plow beam is in the horizontal position, the short arm, which I have mentioned, stands almost in a vertical line extending through said pipe-box and said spring is in or near a vertical position. Consequently, the pressure of the spring is upon

the pivot formed at the pipe-box, or said pressure is in a line which almost touches said pipe-box. Said spring can therefore exert little or no lifting effect upon said beam, notwithstanding the fact that it may exert a great pressure. When the beam ascends from the working position, the short arm which supports the spring turns forward over the pivot or fulcrum and carries with it the lower end of the rod which the spring surrounds, so that the spring no longer presses in the direction of the fulcrum, but farther and farther away from it. The spring then exerts what force it has to increased advantage. This is clearly an embodiment of the principle and action set forth in complainant's patent by said four claims.

I have not overlooked the fact that in complainant's patent the drawing shows a spring which moves over a roller. Said particular spring shown in the drawing is so combined with the rest of the machine as that a change of bearing is effected when the plow beam is moved to or from the working position. Defendant does not use said roller, yet his spring operates in substantially the same manner upon the plow beam; and, as I have already stated, complainant's patent states that a roller may be dispensed with. If the roller is dispensed with, then the way is open for the use of such a coiled spring as defendant uses. Suppose we have before us a machine made in the form shown by defendant's drawing, and called a mechanic to remove the roller as indicated by the specification; the mechanic after removing the roller could use the spring in the form of a bar or blade suitably shaped or bent, and make suitable connections. Having done this with a spring in the form of a blade or bar, he will at once see that a coiled spring may as well be used.

Cross-Examination by Mr. Bond.

X Q. 8. Do you understand that the suggestion in the complainant's patent that the roller may be dispensed with is a direction to re-construct the machine?

A. I understand that it is a direction to another form of embodying the complainant's invention.

X Q. 9. As shown in the drawing, the roller is nothing more than an anti-friction roller, is it?

A. The roller itself acts as an anti-friction roller; the roller and its axle together form a point about which the spring turns as the plow beam moves, so as to change the direction of the line through which the spring exerts its power.

X Q. 10. The Wright spring would work on the axle or spindle of the roller without the roller, the same that it does with it, would it not, with only the difference of some increase in friction?

A. Yes, I understand that if the same spring were retained without change in form, and the roller merely taken from the spindle, that then the spring would bear against said spindle and slide over and turn around the same, with merely some increase of friction.

X Q. 11. You understand, do you not, that the section quoted by you, commencing with line 99 of page 2 of the specification, was intended to, and does in fact, cover any form of spring?

A. Yes, any form of spring capable of being so combined with the other parts as to operate as set forth in the patent.

X Q. 12. Please explain how you can put a spring of the defendant's form into the combination of the Wright patent and make it operative?

A. I assume that the question refers to the machine shown in the drawing. With this understanding, I answer that the spring marked d, in figure 1, may be transformed into a rigid rod or bar, the puller removed from the spindle b, and a greater space made between said spindle and the rigid bar into which the spring has been transformed, and the coiled spring inserted between said spindle and bar, the upper end of the coiled spring being joined to the said spindle, and the lower end of the spring being joined to said bar in a vertical line, passing through or near the pivot of the plow beam, when said beam is in a horizontal or working position.

X Q. 13. Do you understand that the spring d, in figure 1, is a different spring from that shown in figures 2 and 4?

A. No, I understand that said figures 2 and 4 are intended to show the same spring appearing in figure 1.

X Q. 14. If you took the defendant's spring and placed it in the same combination and arrangement that the spring d is placed in, in figure 2, would you have an operative machine? Understanding, of course, that the outer end is free, as in the Wright machine.

A. The particular spring which the defendants use, placed as I understand by the question, would not, I think, answer the purpose of defendant's spring as shown in the drawing. The strain on defendant's said particular spring would then be lateral instead of axial, and I do not think said spring is strong enough to sustain the plow beam when applied in this new way. It is my opinion, however, that a coiled spring might be made of sufficient strength to take the place of the spring d, in figure 1, and applied in the same way. It would, of course, have to be shaped properly. While I state that in my judgment a coiled spring might be made strong enough to be thus used, it would be difficult, and no manufacturer would be likely to use it.

X Q. 15. In the form last supposed in your answer, there would be no advantage in the coiled form, would there; or, in other words, it would be better without coils, as shown in the patent, would it not?

A. Yes, I think a satisfactory spring can be made without coiling the entire length. The less coiling there is done in this particular form, the less work is required. It is to be noted, however, that the spring shown in the drawings is not without coils.

X Q. 16. The specification contains the following statements, to-wit: Figure 1, line 94—"The machine may be of any suitable character as regards general construction, that shown in the drawings being the usual and well known form of the ordinary double-shovel wheel cultivator." And on page 2, commencing with line 125: "While the invention is designed more particularly for use in connection with wheel cultivators, it is obvious that it may be applied to various other machines containing substantially the same requirements" Would you not understand from those statements that the Wright improvement was to be applied, and the patent extend to and cover any machine for cultivating soil, or even for other purposes, that required a lifting movement up to a certain position, and returned from such elevated position to a lower working position?

A. In line 127, in speaking of the invention, the inventor says: "It is obvious that it may be applied to various other machines, containing substantially the same requirements."

By this I infer that he had in mind to apply his invention to cultivating machines comprising a frame and a pivoted drag-bar supported from said frame.

Q. 17. Why do you understand that the statement just quoted by you requires as a limitation a pivoted drag-bar?

A. Because, also, in his specification and in his drawings he shows or describes such.

Q. 18. When he says in his specification that the machine shown in the drawings is of "the usual and well known form of the ordinary double-shovel wheel cultivator," and then says: "It is obvious that it may be applied to various other machines," why do you understand that the various other machines means the one shown?.

A. I do not understand that said quotation means the particular one shown.

Q. 19. Are there not various other machines, such as sulky-plows, gang-plows, harrows and horse-rakes, to which the Wright improvement could be so applied?

A. There may be some forms of such machines to which the Wright invention might be applied; but I think generally such applcation could not be made to the kinds of machines mentioned.

Q. 20. Do you not understand from the statements of the specification which we have just been considering, that the patentee intended to have his patent cover any spring in any machine having substantially the same requirements as the one shown and described, that is, any machine requiring frequent or occasional lifting by the attendant and returning to a working position?

(Complainant's counsel objects to so much of the foregoing question as interpolates an assumed meaning for the term "containing substantially the same requirements," especially in view of the fact that the witness in his answer to cross-question 16, has given his understanding of the meaning of that phrase; and hence the question, as put, is unfair and misleading to the witness.)

A. The latter part of the question clearly assumes more for the quotation than I think it was designed to express. To further justify my position, I quote, beginning at line 7, page 1: "This invention relates to that class of machines, generally wheeled, which have vertically swinging beams or drag-bars to carry the shovels or plow points."

Q. 21. You understand, then, do you, that when the patentee says that the drawings show a machine of the form mentioned in your last answer and says his invention may be applied to "various other machines;" that "various other" means the same machine, do you?

(Counsel for complainant objects, because the question quotes only part of the phrase from the patent, and omits a part which materially qualifies, and limits the part quoted.)

(Counsel for defendant objects to this manner of instructing the witness, and insists that the quotations are fair.)

(Counsel for complainant states that he has not instructed the witness; that the witness needs no instruction, and that he only objects when, in his opinion, the question is misleading.)

(Counsel for defendant replies: "Or hurts.")

A. By "various other machines containing substantially the same requirements," the inventor means such other forms of machines, in addition to the form shown in the drawings 1, as come within the following: "Machines, generally wheeled, which have vertically swinging beams or drag-bars to carry the shovels or plow-points."

Q. 22. Is that the best answer you can make to the question?

A. I think so.

Q. 23. Do you understand that there is mechanically no difference between a structure and a requirement?

A. The question is too profound for my understanding.

Q. 24. The patentee says: "The object of the invention is to render the operation of the machine easier and less laborious to the attendant by applying springs thereto in such a manner that they will assist the operator in raising the beams and shovels attached thereto from their operative to their inoperative position, and this without having the springs exert any objectionable lift-

ing strain when the latter are in action. To this end the invention consists in applying lifting springs in such manner that they exert upon the beams a maximum power or strain when the latter are above an operative position." Are not these points the requirements of the combination, and do such requirements necessarily refer to specific structures?

A. The requirements, if I understand the question, refer generally to the class of machines stated in the first sentence of the paragraph beginning at line 7, page 1, of the specification.

Q. 25. If that is your understanding, then why is not the patent limited to the structures shown and described?

A. It is limited to the structures mentioned in the sentence to which I have just referred, namely, to "machines, generally wheeled, which have vertically swinging beams or drag-bars to carry the shovels or plow-points."

Q. 26. What are the requirements or purposes of the complainant's combination in that kind of a machine?

A. Does the question mean a machine having a vertically swinging beam or drag-bar to carry the shovels or plow-points?

Q. 27. Is not that the kind of a machine which you just stated the patent was limited to?

A. It is.

Q. 28. That is the machine the question referred to.

A. The requirement is to combine with the frame of the machine and said drag-bar, a spring which shall exert little or no lifting effect when the beam is in the working position, and which shall exert a maintained or increased lifting effect when beam is elevated or turned upward upon its pivot. This is the requirement or purpose, and the inventor fulfilled said requirement by making the kind of combination which I explained in direct examination.

Q. 29. Of what practical use or benefit is all of that?

A. All of what I have said?

Q. 30. Yes, of that mechanical requirement?

A. To produce a good machine.

Q. 31. Good in what respect?

A. One—it is easily operated by the plowman.

Q. 32. Or, in the words of the specification, "to render the operation of the machine easier and less laborious to the attendant," is it not?

A. Yes, that is evidently the object that the inventor had in view.

Q. 33. Then why may not the invention of the patent be used in any machine which would render the operation of the machine easier and less laborious to the attendant when the operators are cultivating the soil?

A. All machines or apparatus for accomplishing a certain result need not be alike. To illustrate: A fowl's head may be removed by the use of a gun, or it may be removed by the use of some cutting instrument. In each case, the object or requirement is to remove the head. If the object be to cultivate the soil, two, or several machines wholly distinct, may be used.

Q. 34. If the object was to kill the chicken, it would be a dead chicken either way, would it not?

A. Yes, if the head were removed.

Q. 35. The labor of the attendant, which the complainant's combination is supposed to relieve, is the lifting of the plows in passing obstructions, hills out of line, or turning at row ends, is it not?

A. It is.

Q. 36. And in cultivating corn, planted by a planter in the prairie soils of Illinois and Iowa, in which stones or grubs do not occur, would not the principal labor of an attendant in lifting the plows of the machine, be principally at the row ends?

A. In plowing in the direction in which the planter moved, the hills of corn would be in a straight line, hence the plow beams or shovels would not have to be lifted to avoid hills of corn out of line, so long as the horses drew the cultivator directly over the row. In plowing cross-wise of the direction in which the planter moved, many of the hills would likely be more or less out of line, so that the shovels would require lifting to avoid said hills. In the prairie soil of Illinois and Iowa, where there are no stones or grubs, there are often other obstructions in the form of cornstalks and roots of a preceding season. These become engaged in the shovels to an annoying extent, and frequently require the shifting and lifting of the shovels to free the latter.

Q. 37. Why do you call the solid rock-shaft in defendant's machine a pipe-box?

A. I call it a pipe-box because I understand that is the name applied to it by cultivator manufacturers. I understand that a sleeve surrounding the axle to which the beam is coupled, in some machines, is called a pipe-box, and that when a false bar was placed in front of the axle to form a connection for the plow-beam, it was still termed a pipe-box, although it was no longer a pipe or sleeve.

Q. 38. In the defendant's machine, the structure upon which the spring is placed is what is commonly known by the names of toggle-joint, knee-joint or knuckle-joint, is it not?

A. Yes, the spring extends down to such a joint.

Q. 39. The operation of the arm on the rock-shaft in the defendant's machine is that of a crank-arm advancing toward or receding from the dead center or neutral line, is it not—the spring itself with its contained rod acting as the pitman in this form in defendant's machine?

A. That depends upon the breadth of meaning given to the term crank. It is to be noted that the arm ascending upward from the

beam to which the spring is coupled by means of the rod passing through it, moves through only a small portion of the arc of a circle, and that at one limit of its movement it is substantially on the dead center, and there stops, while at the other limit of its movement it is away from the dead center. It is my impression that an oscillating crank is usually moved through an arc between the points which we call the dead center, and that the aim is to avoid the dead center.

Q. 40. A rocking device, rocked by an arm having a crank-pin may have a crank action, may it not, without revolving in a complete circle?

A. It may.

Q. 41. In the complete revolution of a crank there are two dead points or centers, and two points of greatest power, are there not?

A. There are.

Q. 42. Is not the action of the spring in defendant's machine decreased in its power as the arm of the rock-shaft approaches the neutral line, and increased as it passes away from said line to the extent of its limit in the machine?

A. The lifting effect of the power is decreased when the spring is on, or nearly on, the neutral line, and is increased as it recedes toward its farther limit.

Q. 43. Do you understand that the first four claims of complainant's patent are substantially alike?

A. I understand that they express some differences, and yet it might be said that they are substantially alike.

Q. 44. Do you understand that the complainant's patent instructs anyone how to construct a machine with a radius-bar or link as a substitute for the curved spring and roller?

A. I understand that the patent states that the radius-bar may be substituted for the roller, and that it assumes that a mechanic skilled in the art will understand how to make this modification, after becoming familiar with the invention, as set forth in the patent.

Q. 45. You do understand, do you not, that the specification leaves it to the skill of the constructor, and that it does not explain or describe *how* it is to be done?

A. Yes, I understand the embodying of this modification is left to the skill of the constructor, aided by the explanation of the invention in the patent. The details for embodying the modification are not set out in terms.

(Complainant offers in evidence the full-sized machine mentioned in the deposition of G. Watson French, and which is marked by the witness "Exhibit, Defendant's Cultivator.")

(Complainant offers in evidence certified copy of the decree, and the exhibits B1 and B2 therein mentioned, which said decree is rendered in the case of the *Eagle Manufacturing Company* v. *The Davenport Plow Company* in the Circuit court of the United States for the Southern district of Iowa, Eastern division, the same being marked "Exhibit, Complainant's Davenport Decree and Exhibits.")

(Counsel for defendant objects to the introduction of the Exhibits B1 and B2 as a part of this record.)

The complainant thereupon announces that it closes its *prima facie* case, and notifies counsel for defendant to proceed with all due diligence to take its testimony in defense, in order that the complainant may have time to take rebutting evidence with reference to the hearing at the May term of court.

STIPULATION.

UNITED STATES CIRCUIT COURT, SOUTHERN DISTRICT OF IOWA, CENTRAL DIVISION.

The Eagle Manufacturing Company,
v.
The Moline, Milburn & Stoddard Co. } *In Equity.*

It is hereby agreed that the testimony given by Cyrus Kehr in the case pending in said court, in the Western division, wherein the Eagle Manufacturing Co. is complainant, and David Bradley & Co., defendant, as to matters not herein inquired about on cross-examination, may be used herein with like effect as if given herein, subject to all legal objection; provided, however, that no meaning shall be given to it, other than what it has in the place and context where given, and provided that the complainant may introduce and read so much of the context as may be necessary to make clear the meaning; but defendant's counsel shall give written notice to complainant's counsel, thirty days before hearing, of any such matter, specifying the same by the numbers of the questions, which they may elect to read hereunder.

WEST & BOND,
Solicitors for Defendant.

NATH. FRENCH,
Solicitor for Complainant.

Exhibit: Complainant's Davenport Decree and Exhibits.

This cause came on at this term to be finally heard upon the pleadings and proofs, and was argued by counsel for the respective parties, and the pleadings and proofs having been duly considered, it is hereby this 8th day of September, 1887, ordered, adjudged and decreed as follows, viz: That the letters patent referred to in complainant's bill, being letters patent of the United States granted unto Edgar A. Wright for improvements in cultivators No. 242,497, and dated June 7, 1881, and the letters patent of the United States granted unto said Edgar A. Wright, dated December 16, 1879, No. 222,767, for improvements in wheeled cultivators, are good and valid patents, and the same are not anticipated by the patents offered in evidence by the defendant and described by name and number in the agreed abstract in this cause; and that the said Edgar A. Wright was the first and original inventor of the improvements described and claimed therein; and that the complainant became the owner thereof as alleged in its bill of complaint.

It is also found, ordered, adjudged and decreed, that the defendant, by making and vending cultivators such as are shown in defendant's Exhibits B1 and B2, forming a part of the said agreed abstract, infringed upon all the claims of said letters patent No. 242,497 and upon the exclusive rights of the complainant therein; and also that in making and vending cultivators with improvements such as are shown in defendant's said Exhibit B1, defendant infringed upon the first, second, third, fourth, sixth, the eleventh claims of patent No. 222,-767, and upon the exclusive rights of the complainant therein.

And it is further ordered, adjudged and decreed, that the defendant be perpetually enjoined and restrained from making, using or selling, machines substantially such as are described and claimed in said letters patent Nos. 242,497 and 222,767, and more particularly such as are shown by the said Exhibits B1 and B2, and from doing any act or thing in infringement of said patents, or either of them, or in violation of the exclusive rights of the complainant thereunder.

And it is also ordered, adjudged and decreed, that the complainant do recover of the defendant the profits, gains and advantages that it has derived from the manufacture and sale of the said patented improvements, and also the damages which the complainant has suffered by reason of the said infringement by the defendant.

And it is further ordered, adjudged and decreed, that this cause be referred to E E. Cook, Esq., of Davenport, Iowa, as Special Master, to ascertain, state and report to the court, an account of the aforesaid gains, profits, advantages and damages; and that the defendant attend upon the accounting and produce its books, vouchers and documents, as the master may direct.

And it is further ordered that the parties and master may apply, upon due notice, to the court, upon the foot of this decree, for such other and further order of instructions as may be necessary.

And it is further ordered, adjudged and decreed, that the complainant recover of the defendant the costs of this trial to be taxed.

(Signed) J. M. Love,
Judge.

Circuit Court of the United States, Southern District of Iowa, Central Division.

The Eagle Manufacturing Company,
v.
The Moline, Milburn & Stoddard Company. } *In Chancery.*

Stipulation.

It is hereby stipulated and agreed by and between counsel, that an order of court may be entered at any time at or before hearing *nunc pro tunc*, appointing R. B. Whittlesey, Special Examiner in this cause, to take testimony on part of complainants for final hearing, and certify and return the same under the rules of court appertaining thereto.

Testimony In Rebuttal.

Examination of witnesses and other evidence on behalf of complainants, under the 67th Rule in Equity as amended, before R. H. Whittlesey, Special Examiner, at the Hotel Albert, corner of Eleventh street and University place, in the city of New York, beginning at 11 o'clock A. M. on Tuesday, April 17, 1888, pursuant to notice.

Present: George H. Christy, Esq., and Nathaniel French, Esq., counsel for complainants, and L. L. Bond, Esq., counsel for defendants.

Deposition of Henry L. Brevoort.

Henry L. Brevoort, Esq., a witness on behalf of the complainants, being duly sworn, testifies as follows in answer to interrogatories propounded to him by George H. Christy, Esq., of counsel for complainants:

Q. 1. State your name, age, residence, and occupation?

A. Henry L Brevoort; age 39; residence of Brooklyn, N. Y., and by occupation an engineer.

Q. 2. Please state, generally, your qualifications, or rather opportunities for familiarizing yourself with mechanical questions, your experience in dealing with such questions, particularly as they arise in connection with patents for inventions, and your experience as an expert in patent causes; and also, more especially, as regards cultivators for agricultural use?

A. When I was a boy, I learned the trade of machinist, and after this for some years I operated a machine shop of my own. When I gave up this business, I devoted myself to designing and testing machinery, such as steam engines and the like. For the last thirteen or sixteen years I have been very frequently called upon to testify as an expert witness in suits relating to patents, and I have been so called, in between three and four hundred cases. I am acquainted with the structure of agricultural implements, having been called to testify in suits relating to hay-rakes, harrows, plows, mowing machines, and cultivators. I have, during the last fifteen years, many times acted as a solicitor of patents before the Patent Office of the United States, and have had a large experience in the preparation of drawings, specifications, and models for various mechanisms.

Q. 3. Have you examined Letters Patent of the United States No. 242,497, granted June 7, 1881, to Edgar A. Wright—being the patent sued on—so as to understand the construction and operation of the invention described therein, and more particularly summed up in claims 1, 2, 3, and 4?

A. I have very frequently read and examined the patent, and I think that I understand the mechanism therein described, and its purpose and operation. I have also carefully read the claims referred to, and I think that I understand the invention set forih in the said claims.

Q. 4. Have you read, and do you understand the contents of United States Letters Patent No. 95,437, granted to H. N. Dalton, October 5, 1869—"Defendant's Exhibit, Dalton Patent?".

A. I have very frequently read the patent, and I think I understand what the said patent describes and shows.

Q. 5. Please state, whether or not, in this "Defendant's Exhibit, Dalton Patent," now before you, you find the subject matter of the invention of claims 1 to 4 of the Wright patent sued on, or any of them, and state your reasons for any opinion you may express?

A. I do not think that the Dalton patent does show the inventions of any of the claims of the Wright patent referred to in the question, these being claims 1, 2, 3, and 4, of the patent in suit. To make this opinion clear, I will state the reasons on which it is based, and in doing so, I will first, briefly, give my understanding of what Wright describes and claims, so that I can compare his inventions, as I understand them, with that which Dalton shows and describes.

The Wright patent, on its face, is for an improvement in a certain class of machines, to-wit: Cultivators. These machines, the patent says, are generally wheeled; they have vertically-swinging beams or drag-bars, and an arched axle capable of passing over the standing corn. To this class of machines the invention is applicable, and the invention consists in applying lifting-springs so that they exert upon the beams a maximum power or strain when the latter are above an operative position, the springs acting with increasing force or effect on the beams as the latter are raised. The object is simple. When in use, the beams of the cultivators are intended to be moved by an operator as the machine passes over the ground so that those portions of the earth can be acted upon by the shovels, which, in the judgment of the operator, require such action. During this operation, it is not desirable that the lifting-spring should be exerting any, or any appreciable, upward strain, because if they did the operator would have to continually combat this strain in the ordinary work of the machine. In passing from place to place, and in passing over obstructions, it is frequently necessary to raise the beams, and as the beams are heavy, this would impose considerable labor upon the operator. The patent describes an arrangement whereby the drag-bars or vertically-swinging beams which carry the plow-points, can, by springs, be raised when the operator starts them, in the upward direction with an increasing force, so that the beams will be elevated by a strain, increased as the beam moves up, while at the same time, with the beams in their operative position, the strain is either greatly lessened or entirely removed. The patent shows and describes springs adapted to give this mode of operation, though the inventor says that other forms may be used when they are so combined with the machine that they exert a greater or stronger lifting force or effect upon the beam when the latter is above the operative position, than when it is in use.

The first claim refers to a combination of certain parts in a machine having the features of a cultivator, and by this I understand the claim to mean, a machine provided with suitable wheels and an arched frame and vertically-swinging drag-bars or beams, com-

bined with lifting-springs which act with an increasing force or effect on the beams as the latter rises, if but one beam is employed, and *vice versa*.

The second claim is also for a combination in the same machine, and it includes the necessary structure to constitute a wheeled cultivator, embracing the vertically-moving beam and a lifting-spring, so combined with the other parts, that as the beam is raised from its operative position, an increasing upward strain is communicated to the beam as the latter rises.

The third claim is also for a combination of parts in, as I understand it, a machine having the requirements of the machine in the patent, embracing a wheeled frame, a vertically-moving beam or drag-bar attached thereto, combined with a lifting-spring as described in the patent, which is adapted to exert upon the beam a greater strain or effect when the latter is elevated, than when it is depressed.

The fourth claim involves the vertically-moving beam, and a lifting-spring and a shifting or changing bearing, whereby the lifting action or effect of the spring upon the beam is increased as the beam is elevated.

In the Wright patent, the springs are so combined with the arched axle and the beams, that when the beams are elevated the springs increase their lifting effect upon the beams, as the beams go up, the conditions becoming more favorable for the elevating action of the springs in their effect upon the beam. The springs thus, as I may say, obtaining a more and more advantageous action upon the beam, so that, from a condition of no elevating capacity, or at least very little, they acquire as the beams go up very great elevating capacity.

I will now turn to the Dalton patent, which I am asked to compare with the Wright invention The Dalton patent shows and describes a gang-plow consisting of a frame, to the bottom of which, I presume, the plow-shares are to be attached by suitable attaching means. This frame is provided with a tongue, and is carried by an axle which is cranked adjacent to the wheels so that the crank portion of the axle may be some five or six inches above the axial line of the hubs. To this portion of the axle the frame is attached. A coiled spring is attached at one end to the axle around which it is coiled, and the other end of it is attached to the frame of the machine. The patent states as follows: "The spring D should be so arranged that when released, its elasticity may revolve the axle C in such a direction as to raise the frame A, and with it the plows more or less, according to the space through which the said axle is allowed to revolve."

The axle is controlled in its movements by a lever E, which is attached to it, and which is to be held in the desired position by stops or catches which are not shown. Now, the first distinction between the Dalton device and the Wright devices, is this: The Dalton structure is a gang-plow, and is not a cultivator. This difference is not a difference merely in name, but the two things that the names describe are radically different things. A gang-plow is adapted for

one class of work having certain requirements, and a cultivator is adapted for an entirely different class of work having other and different requirements. The gang-plow is not required to pass over rows of comparatively high-standing grain, and consequently in its structure, the high-arched axle essential to the cultivator is not found. In the plow of Dalton, there is, it is true, a slight arch to the axle, but when the machine is in use, the arched portion is to be turned more or less downward toward the earth and occupying a position generally, I should imagine, not above the axial line of the hubs, while in the cultivator the arch is not movable, and is always in the vertical position when the machine is in use. Thus, in the case of Dalton, the small arch or crank-axle is to be by the lever turned over more or less, as it is desired, that the plows attached to the frame should cut a deep or shallow furrow. For a deep furrow, the axle is turned further toward the ground; for a shallow furrow, it is retained in a more elevated position; but this difference in elevation is merely a matter of inches, the intent of the machine being to utilize this cranking of the axle for a totally dissimilar purpose from the arching of the axle in the cultivator. So I think it is evident, that in the Dalton plow one of the essential requisites of the cultivator, to-wit: the arched axle for passing over standing crops, is omitted.

The next feature of dissimilarity is found in the fact that the Dalton structure is not provided with the drag-bar or shovel-beams capable of upward movement independent of the axle, and capable of being directed in operation laterally independently of the rest of the machine. Such devices are totally lacking in Dalton, and neither they or their equivalents appear in any form. Dalton's plows are not adapted to operate as cultivators, and neither are Wright's cultivators adapted to act as plows, as these terms are ordinarily used. Both have implements to act upon the earth, but the action is different, and the implements are totally dissimilar. A plow is adapted for cutting through and turning over soil to a considerable depth, and is an implement that requires great strength and firmness to enable it to be forced through heavy and unyielding soils, whereas the shovels of a cultivator are adapted for operation upon soil that has already been broken and in which crops are growing, and these shovels require to be controlled and manipulated independently from the arched axle. Therefore, it is clear that Dalton has not got the second essential for a cultivator like Wright's, to-wit: a drag-bar or shovel-beam, capable of being utilized for doing the work that the beam and shovels of the Wright structure are adapted for, but that on the other hand, the Dalton structure has plow-shares attached to the wheeled frame adapted for operating upon the soil, to prepare the same for crops, which is a totally dissimilar operation to that of the shovels of a cultivator.

Now, Dalton has shown a spiral spring, or a coiled spring, which he says is to raise the frame by turning the axle when it desired to lift the frame upward. As the frame is raised upward the effort of raising it becomes less by reason of the fact that as it rises its weight

is carried more and more over the axial line of the wheel hubs, and consequently, in constructing a spring for this purpose, the spring would naturally be so made as to accomplish the result with the least labor, and to make a spring with which this could be accomplished with the least labor would involve the making of the spring, which, when the parts are in the position shown in the drawing, would be exerting practically no effort, but which, when the plows were lowered by turning the axle, would exert a rapidly increasing force. Such a spring would be the normal one to apply to the Dalton structure, and such a spring would fulfill the requirements of the Dalton patent, exerting its greatest strain when the plows were in the ground, and exerting a constantly decreasing energy as the plows were raised. If the machine now be examined in the light of the present controversy, it will be found that probably such a spring would act upon the frame with a decreasing energy, and as the weight to be overcome by the spring decreased as the frame rose, they would probably decrease together.

It must be borne in mind, in considering the Dalton structure, that the spring is not adapted or arranged to act with any increasing effect upon the frame as it is elevated, and that in the case of the application to Dalton of a very strong spring which would uncoil with a practically constant energy, that the operation of such a spring would merely be to raise the frame at the upper part of its upward movement with greater ease, by reason of the fact that the frame was being carried over the axial line of support. No other advantage would be had. Now, turning to the Wright patent, the arc through which the cultivator beams are moved is comparatively a small one, and in machines of this class the difference in the weight of the beams, by reason of their position, is very slight, and a spring which is expanding or losing power in the act of raising them must, if it is to raise them with an increasing force or effect, do so as it loses power, by gaining an advantage in the direction in which it acts, or by increasing the leverage that it brings to bear in raising the beam. In this way, though the spring is diminishing in power, it can be made to operate on the practically constant weight of the beam with an increasing force or effect as the beam is moved upward. It is clear, therefore, that no such spring so applied is found in the Dalton machine, as in that machine there is no practically constant weight raised, but one is raised, which, by its position, continually goes up with less effort, while in the case of the cultivator, the beam requires practically the same effort throughout its movement upward to raise it. To raise the beam in the cultivator with increasing force or effect by a spring which is constantly losing energy as the beam rises, it is essential that the spring should so act during its expansion as to more advantageously apply its power to the beam being raised. This advantage is attained in the Wright structure through the increased leverage with which the spring applies its force, and to accomplish this, a shifting or changing bearing is provided for one end of the spring,

and thus as the practically constant weight of the beam is lifted, the spring can exert an increased effort in raising it by gaining an advantage in the leverage with which it works, and by the use of a shifting bearing for one end of the spring. The first requisite of the Wright spring is, that it should exert but little, if any, lifting energy upon the beam when the beam is down, or in operative position. Comparing this with Dalton, we find that the Dalton spring exerts its maximum energy when the plows are in their lower or working position. In the Wright structure, the spring, by reason of the gain or leverage and the shifting bearing, exerts an increased lifting effect as the practically constant weight of the beam is raised and the spring weakened. In Dalton, as the spring weakens, it exerts no increased lifting effect upon a practically constant weight, for the weight in Dalton is constantly being so moved that its elevation becomes a matter of less and less labor for the spring. This is necessarily true of a machine organized as is the Dalton machine, where the weight raised is brought over the point of suspension, and it is necessarily untrue in a machine like a cultivator, where the weight is never brought, even approximately, over the point of support, but where the weight lifted is practically constant. As I have before said, with a spring which I think a mechanic would apply to Dalton, the expiring energy of the spring would be suited to the lightening of the load to lift it. It must be borne in mind that Dalton describes his spring as adapted to raise the gang-plows while running, so that they may cut a light furrow, or be entirely lifted from the ground. Now a series of plow-points jammed with their noses in the solid earth, requires to lift them while running a maximum of spring energy when the plows are in their lowest position. Compare this with the cultivator, where there is to be no, or at most very little, tendency to lift the shovels when they are at work, and when, according to Dalton, his machine requires the greatest energy. Thus, the greatest energy of the Dalton spring is to be had when the plows are in the ground, and at a time when Wright is to apply practically no energy to raise his beams. I do not think that the Dalton patent describes a machine which in any sense contains parts adapted for increasing the force or effect of the lifting power of a spring upon any device that is in any sense the equivalent of the drag-bar of a cultivator. In fact, Dalton lacks those devices that are essential to enable an expanding spring to operate in the way that Wright's spring operates on his drag-bar. Now, therefore, I do not think that the Dalton device shows the combinations of any one of the claims here in controversy. His device is not a wheeled cultivator, which is made essential in the first and second claim by terms, it has not a vertically-swinging drag-bar or beam, which is an essential of all the claims; it has not got the shifting or changing bearing which is specifically referred to in the fourth claim, and it has not a spring which acts with increasing force or effect, or an increasing upward strain, or with a greater strain, or with a greater lifting effect upon any device which is in any sense a drag-bar or beam, and these are essentials of

all the claims. It may be that under certain circumstances it might be easier to raise Dalton's plows throughout the last part of their upward movement than throughout the first part of their movement, but this has nothing to do with the matter, for in Dalton, such ease comes from the fact that the load is being raised over the point of support, and not from the fact that the expanding spring is operating with a more advantageous leverage and with a bearing that shifts to admit of this advantage being had. For these reasons I do not think that the Dalton structure shows the inventions set forth in the first four claims of the Wright patent.

Before leaving the subject, I should state that in the use of plows, as compared with cultivators, the plows are raised but seldom from the ground, while the cultivators are raised with great frequency. The cultivator shovels get clogged with roots and materials in the ground, and have to be constantly freed, and therefore the advantage in raising them easily is much more necessary than in the case of a plow, and likewise I should add in referring to the Dalton structure that the action described in the Wright patent of the spring, in giving an increasing effect, is not desired, and is actually disadvantageous in the Dalton structure, from the fact, that if the spring was adapted to give an increasing effect as the plows were raised, then unnecessary labor would be thrown upon the operator in overcoming the spring to get the plows into the ground. However, the two machines operate on diametrically opposite principles, and it seems to me that the differences I have pointed out clearly distinguish one from the other.

Q. 6. Have you familiarized yourself with the Gorham patent, No. 154,666, of September 1, 1874, "Defendant's Exhibit, Gorham Patent," and if so, please make the same comparison as between it and the Wright invention of the first four claims of the patent sued on, and give your reasons as before?

A. I have familiarized myself with the Gorham patent, which describes a cultivator having two drag-bars with shovels on them. The cultivator beams are pivoted at their front end, and about one-third of the distance back from the pivot there is bolted a rod called the suspension rod and marked with the letter d. This rod projects upward and forward from the beam, the upper end passing through a hole in a bracket or ear fastened to the yoke-beam of the cultivator. A spiral spring is upon that portion of the rod which projects through the ear and is held in position by a nut on the end of the rod. Through this rod, and by the spring, the cultivator drag-beams are suspended, and by the nut their height can be regulated. When the beams are raised to hook them up, whatever of compression there was in the spring will be utilized in helping to raise the drag-bar, but they are manifestly exerting their greatest lifting action when the cultivators are in the ground, and the springs can exert no increasing strain or effect as the drag-bars are lifted upward, acting as would any spiral spring placed over the drag-bars with a constantly decreasing force or effect. It seems to me that it is unnecessary to further dwell upon this machine, as it is manifest on the face of it that it does not con-

tain the essential feature of all of the claims of the Wright patent, in that, there is no spring so arranged as practically to have no effect, or very little effect, when the drag-bars are down, and then adapted to exert an increasing effect, upward strain, or lifting tendency, when the drag-bars are elevated. On the other hand, in the Gorham patent, the springs are doing their maximum work when the shovels are down, and the springs are constantly losing force or effect and giving less strain and exerting less upward tendency as the drag-bars are raised.

Q. 7. Are you familiar with the William P. Brown patent, No. 190,816, of May 15, 1877, "Defendant's Exhibit, Brown 1877 Patent?" If so, please state if you find therein the subject-matter of any, or all, of the first four claims of the Wright patent sued on; also, whether or not the changes necessary for giving to the spring of the Brown 1877 patent the increasing force or effect of the Wright claims, would, in your opinion, involve patentable invention; and as illustrative of the kind of changes I refer to, I call your attention to what Mr. Bates, defendant's expert, says of the Brown 1877 patent, in his answer to Q. 7.

A. I am familiar with the Brown patent, No. 190,816, having been called upon to examine the same with great care in a previous litigation. The Brown patent does not show the invention of any one of the claims of the Wright patent in suit. It is needless to give my reasons for this, as Mr. Bates does not, in his deposition, state that it does. I have read what Mr. Bates has stated as to the proposed changes in the Brown machine, and by so reconstructing the Brown machine, I dare say, a machine having the essentials of the Wright machine could be produced. To so reconstruct the machine, however, would involve a departure of such a radical nature from the mechanism of the Brown machine, that it would clearly amount to an invention to so reconstruct Brown. Brown uses an arm and a spring to sustain part of the weight of the beam when in operation, and as the beams are raised, the spring, as in the patent of Gorham, constantly loses tension, but the idea on which the Brown patent rested, or at least one of them, was to have this spring exerting its power and force at its maximum when the shovels were in the ground. Now, to take this machine and move the arm, as Mr. Bates suggests, so that there would be no, or appreciably, no lifting effect when the shovels were in the ground, but the maximum lifting effect would be had after the shovels were raised and as the beam went up, would be such a change as would require alteration in the parts themselves, and amount to a radical departure from what Brown showed, involving new uses and new capacities, and would undoubtedly amount to an invention on the part of any person who should make the change in the machine. The device of Brown, as shown in the patent, is not adapted for the changes, as the grooves in the pipe-box in Figure 4 show. I can only say, in conclusion, that to make the alteration suggested by Mr. Bates, would amount practically to building a new machine, having new capacities and new methods of operation not

shown by Brown, and which would be so radical in their nature, and would involve such modifications and alterations of parts as would constitute a substantive invention on the part of the person who attempted it. In this connection, it may be noted, that if the arm M, of the Brown patent, was thrown to the left from the position as shown in Fig. 2, to the necessary extent, that such change would involve the reconstruction of the link now used for connecting the spring and the arm, which, in view of the change, would have to be greatly lengthened, unless some change was made in the spring. The link would, at any rate, have to be altered. Referring to Fig. 4, of the patent, it will be seen that the piece G fits on to the pipe-box E, and that both parts are grooved so that they may fit and hold tightly when secured by the loop *s*. It will be noted that there are a few grooves in the pipe-box beyond the lower grooved edge of the stirrup, thus indicating a capacity for adjusting the arm M forward, but to a degree that would not be sufficient, nor anything like sufficient, to give to the parts the operation described by Wright. This is conclusive, I think, that so far as the Brown patent goes, no thought of such an adjustment was ever entertained by the inventor who produced the Brown machine. It is very easy to suggest, after an invention has been made, how some old structure could be modified, and changed, and altered, to turn it into the new thing, but those resemblances are usually seen after the new invention has had life and being, and they are not at all evident before.

Q. 8. Have you examined the Ward patent, No. 200,955, granted March 5, 1878, "Defendant's Exhibit, Ward Patent," and if so, state what relationship, if any, this patent has to the Wright invention in question, and give your reasons as before?

A. I have carefully read the Ward patent, and I think that I understand the same, though I am in doubt about certain of the details of construction. However, the patent shows a cultivator with two drag-bars attached to a wheeled frame. Attached to the drag-bars by a long lever extending forward from each drag-bar is a weight. The lever that carries the weight, besides projecting forward in the machine, projects upward, and the weight is thus held almost at the top of the machine. The weight seems to have two functions; one is when a shovel strikes a stone or hard spot, and its movement is so arrested that it is liable to break, the weight will be moved and the endangered shovel will be allowed to hinge backward, and it will thus pass the obstruction. An intricate series of catches are shown for accomplishing this purpose, and just how they work I cannot with certainty determine. The description is meagre, and the drawings are not clear, and though I think I could make the device, I don't think it would accord with the specifications and drawings exactly. The patent says, that by raising the handles of the drag-beams, the weights N will descend in front of the axle, and will thus balance the plows away from the ground. I have no doubt that if the weights are heavy enough they could have this action, and as they fall for-

ward they will balance the plow-beams, or, properly speaking, the drag-bars, and cause them to be lifted from the ground.

This part of the machine is perfectly comprehensible, but I fail to see that it has any bearing or relation to the Wright invention, in which the lifting of the drag-bars is accomplished by the instrumentality of springs, and which patent is limited, as I understand it, by the terms of the claims, to a spring for doing the work of lifting. As a matter of fact, the practical requirements of such machines limit them to the use of springs in contradistinction to weights. There are many situations, and this is one of them, where a spring and a weight are not equivalents. Any one can see what the effect would be in a cultivator of two 30 or 40 pound weights held at the top of long levers and high up in the machine. The result would be a totally useless and impracticable machine, which would be soon torn to pieces by reason of the moving weights sustained in the position best calculated to rack and tear the machine. Their use would be wholly impracticable.

Coming back to the equivalency of a weight and a spring, I think many examples can be given besides a cultivator, in which they are not equivalents. Take, for example, a watch and a pendulum clock —both keep time, both, so long as they are kept perfectly still, might be used interchangeably, but no one can assert that the watch, when on board of a ship or on a railroad train, can have its place taken by the pendulum clock. Many other examples occur—for example, a spring-bed, when made with springs, is a highly serviceable article, but I think if weights were substituted for the springs, that but few people would sleep on such a bed. So, for example, in an eye-glass, if the function of the spring was carried out by a weight hanging down on each side of a man's nose, I am disposed to think that spectacles would have a larger sale than eye-glasses. Examples can be multiplied without end, and it seems needless to burden the record with further illustrations.

Adjourned, to meet at same place on Wednesday, April 18, 1888, at 10 o'clock, A. M.

R. H. WHITTLESEY,
Special Examiner.

NEW YORK, April 18, 1888.

Met pursuant to adjournment. Counsel present as at last meeting.

Examination of witness Henry L. Brevoort resumed.

Witness, continuing his answer, says:

In the Ward machine, the tongue R is very high, being held by a correspondingly high arch, and the tongue is intended, as I understand it, to pass forward over the horses, and not between them. Now, the weights N, are held up by their levers close to the tongue. I call attention to this fact as showing how high in the Ward machine the weights are above the ground, and it is manifest that the higher up is the position of the weights, the more impracticable does the machine become, because the weight sustained in such an elevated position, would rack and tear the machine, and in practice would soon destroy it.

Q. 9. Please compare the Wright 1879 patent, "Defendant's Exhibit, Wright 1879 Patent," with the Wright patent in suit. State whether the inventions of the two patents are the same, or different; and if different, whether the difference is substantial in its character, and is set forth in the specifications of said patents with such clearness and precision as to be readily apprehended?

A. I have compared the two patents. The mechanism shown in the drawings is the same mechanism, but the invention set forrh in the patents are separate and distinct inventions, and are specifically so stated to be in the specifications and claims. I may say, generally speaking, that the patent of earlier date describes a cultivator in which is claimed mechanism which has the effect when brought into play, of both raising the beam upward, and when desired, of pressing the beam downward, while the patent of later date refers to mechanism in which a spring, as it loses tension, will raise the beam with increasing effect as the beam goes up. I will quote from the patent certain statements which clearly differentiate the inventions. In the 1879 patent, I find the following: "I do not claim in the present patent the broad idea of a lifting-spring which acts with increasing force as the beam rises, as I have made the same the subject of a separate application, bearing date prior hereto." I now turn to the patent of later date, and I quote the following: "No claim is made in the present case to this duplex action of the springs, nor to the peculiar

form or arrangement of the springs, otherwise than as regards the feature of exerting an increasing or a maximum strain on the beams as the latter rise, the peculiar construction of the springs being already covered in a patent hitherto granted to me." Now, it will be observed that the patent of June 7, 1881, which is the patent issued last, and is the one in suit, was applied for in May, 1879, while the patent issued first, was applied for in November, 1879.

Q. 10. If I correctly understand the views of Mr. Bates, defendant's expert, as contained in his answer to interrogatory 18, he seems to be of opinion that the first four claims of the Wright patent in suit, are also found among the claims of the Wright 1879 patent. Please refer to what Mr. Bates says on that point and state what the facts are in that regard?

A. I have read the answer which Mr. Bates has given to interrogatory 18, and I think I understand the statement that he makes. He says that the inventions of claims one, two and three, of the patent in suit, are found in claims four, six and seven, of the 1879 patent. Now, claim four, of the 1879 patent, refers to an automatic spring which will urge the beam both upward and downward; in claim six, of the 1879 patent, an invention is referred to in which the strain is changed from one direction to the other, or ceases in one direction and is manifested in another direction. In the seventh claim, there is described a spring which, as I understand it, substantially is to have two portions—one to urge the beam upward, and the other adapted to urge it in any direction except upward. Now, I fail to find that these claims are for the same inventions as are specified in the first three claims of the patent in suit, in each of which a spring is described which is to operate with an increasing force or effect, or with an increasing upward strain, or with a greater strain or effect as the beam rises.

It is necessary to go over claims five, eight and twelve, which are said to show the fourth claim, for in neither of these claims in the 1879 patent is there involved the invention specified in the fourth claim of the patent in suit, in which the spring is to exert an increased effect upon the beam as the latter rises.

Q. 11. In his answer to interrogatory 9 Mr. Bates, defendant's expert, gives his understanding of the meaning of the phrase, "may be applied to various other machines containing subtantially the same requirements." Please state if you agree with Mr. Bates in the views there expressed, and if not, point out his error?

A. I have read the answer that Mr. Bates gives to the ninth question, and it seems to me that he uses the term requirements in one sense, and that the patent uses it in another sense. In the patent, the term "requirements" is used, as I understand it, in the

sense of the requisites necessary for the organization, and refers to the paragraph beginning on line 7, of the specification, first page, that is confining the invention to machines in which there are vertically swinging bars projecting from, and pivoted to, a wheeled frame, which bars have, in the operation of the machine, to be frequently raised or depressed in the ordinary use of the mechanism. This is the class of machines to which the invention is to be applied, and which has substantially the same organization as the machine of the patent, and with which the invention is adapted for use.

Q. 12. I also notice that Mr. Bates, in his deposition, in describing the structure of the Wright machine, speaks of "a spring with a long-curved arm attached * * * * in such a way as to have the action of an incline plane, and thereby exert a lifting effect on the beams." To what extent, if at all, is this incline theory of Mr. Bates mechanically correct?

A. I don't understand that the theory is correct at all. There is no action in the Wright machine due to the introduction of an incline plane which is pushed in under a roller. The spring shown lifts the beam and goes up as the beam goes up, and it is in no sense an incline plane, but is a spring-action which elevates the beam, and I fail to see any reason why Mr. Bates should have called it, mechanically speaking, an inclined plane.

Cross-Examination by L. L. Bond, counsel for defendants.

X Q. 13. What parts do you include in the statement of your last answer when you say that Wright, in using his radius-bar would use the same means of connection, etc.?

A. I include an articulated connection between the spring and a device with which it is connected, in this connection illustrating the fact that Wright contemplated an articulation at such point.

X Q. 14. If the Wright roller was made in proportion to the size shown in the drawing, would it necessarily make a complete rotation, and if not a complete rotation, would not its back and forth movement constitute substantially an articulated joint?

A. I should think it would make a complete rotation. It would not be precisely an articulate joint, though it would be a substitue for it.

X Q. 15. Have you ever practically used plows or cultivators in the field?

A. No.

X Q. 16. In several of your answers, when referring to complainant's patent, you speak of the Wright inventions, do you find more than one invention shown and described in that patent?

A. There is described one invention, but the invention is capable of different expressions, and in this sense, I speak of inventions in speaking of the claims.

X Q. 17. Do you understand that any part of the Wright invention consists in arranging the machine to pass over rows of standing corn?

A. This feature of the device is shown in the drawings, and described in the patent, and those claims that specifically refer to a cultivator by name, I should imagine might be understood as including an arched axle, so that the corn can be passed over.

X Q. 18. You refer, do you not, to the description commencing at line 95, page 1, of the specification, where it is described as a well-known form of the ordinary double-shovel wheeled cultivator?

A. Yes.

X Q. 19. The specification mentions in several places the beam being above operative position, and you have used the same expression. What does it mean?

A. It means with the beams elevated so that the shovels are clear of the ground, as shown in Figs. 4 and 5, for example.

X Q. 20. When the operator desires to lift either beam when the machine is running, does he not have to lift the beam with the accumulated earth upon the shovels above such operative position before the Wright spring takes effect?

A. He has to lift the shovels and the added weight of the adherent dirt. In lifting the shovels, they come out of the ground in the arc of a circle and in the direction that they point.

X Q. 21. While that is correct when the machine is standing still, is it correct when the machine is in motion?

A. When the machine is in motion there would be more weight to be raised.

X Q. 22. If the spring exerted any down pressure, or held against the beam as a stop, this down pressure, or the force necessary to pass the stop, would have to be added to the original weight and the strain caused by the earth, to get at the sum total of the operator's work, would it not?

A. If the spring exerted down pressure, this would have to be overcome as well as the other weight.

X Q. 23. If you desired to run a shovel-plow or a mould-board plow out of the ground by the draught of the team, how would you do it in either case?

A. I suppose in ordinary plowing the plow would be run up gradually out of the ground, though I have often seen a plow pulled back, and got out that way.

X Q. 24. Do not cultivators which run between the rows require as much lifting over obstructions, and getting around at ends of rows, as straddle-row cultivators do?

A. I never saw one. I see no reason to suppose that one kind, or the other kind, would require a different amount of elevating.

X Q. 25. Do not gang or sulky-plows have the same requirements for getting around the ends of furrows that cultivators do for getting around the ends of rows, and do they not require the same lifting of the plows or shovels above the ground for transportation purposes?

A. Probably in the cases named, but a cultivator must be lifted with great frequency while moving along and doing its ordinary work—much more frequently, I should think, than a plow.

X Q. 26. That depends, does it not, as to whether the field obstructions are stones or roots, or whether they are corn stubble?

A. It would depend on the obstructions in any case.

X Q. 27. The plow would have to be lifted over stones or roots, as well as a cultivator, would it not?

A. If the stone presented an obstruction that could not be passed, both would have to be lifted.

X Q. 28. Is not the shovel-plow frequently used for stirring the soil in preparation for crops, as well as for cultivating the soil after planting, or in other words, is it not the old well-known Greek plow?

A. I suppose it could be used. Whether it is so used to any extent I don't know. I do not understand that cultivators, such as we are discussing, are used for breaking ground in the way that an ordinary plow is.

X Q. 29. Are not plows frequently used in the cultivation of growing plants, particularly where the result known as hilling is desired?

A. I have seen plows being run between rows of plants; how common the practice is I don't know.

X Q. 30. What, or about what, is the average weight of an iron cultivator beam used in a straddle-row cultivator?

A. I never weighed one, but I should judge that the beam and its attached shovels with the handle, would weigh from forty to sixty pounds.

X Q. 31. As you understand the Wright patent, why, under your explanation thereof, are not the first three claims substantially alike?

A. The various claims referred to are, it is true, somewhat alike, so far as the invention expressed is concerned. They differ in their phraseology, however, and the court, in construing them, may, by reason of this difference in phraseology, put a different meaning upon the several claims. For example, in the first claim, a lifting spring which acts with increasing force or effect on the beam, is referred to; in the second claim, a spring is described whereby an increasing upward strain is communicated to the beam, and in the third claim, the spring is to exert a greater strain upon the beam. Now, these differences of phraseology may, from the legal aspect of the case, lead to different constructions of the claims. Mechanically speaking, the claims seem to me much alike.

X Q. 32. Are not these distinctions made nugatory by the specification, in the clause commencing with line 60, on page 2, where, on referring to the spring, it says: "Or it may be caused to act with substantially uniform effect, etc.?"

A. I do not see how this language especially effects the question—the portion quoted refers as I understand it, to the fact that as the beams are lifted from their lower position, the spring may exert a very powerful lifting effect, which may be increased as the beam rises, or that, as the beams are lifted, and the increased effect is felt, the assent of the beam then may be practically uniform.

X Q. 33. Reading the part quoted, and further on in the specification, do you not understand the statement there made to be in effect, that the spring may be a uniform counter balance to the weight of the beam?

A. The language may mean that the spring, despite its weakening by expansion, may keep up, by the increased leverage and the shifting bearing, a sustained effect upon the beam, or it might mean that after the handles have been raised, the effect is to be a sustained effect, due to the same causes, but an increased effect in that it is greater than the effect when the shovels are in the ground. Exactly the interpretation to be given to these words is a matter of construction of the patent. I have paid but little attention to the sentence quoted, by reason of the fact that the claims deal alone with an increasing effect or force, that is, the four claims in controversy.

X Q. 34. If that is the meaning of the statement, why does the patentee differentiate it from the other form by adding "in which case, however, the machine would require greater attention on the part of the operator to prevent the shovels from riding out of the ground." The difficulty of riding out of the ground would only occur, would it, when the weight of the beam was counter balanced in its lower or working position?

A. I noticed these words before, and I notice the fifth claim, and these portions of the patent incline me to the view I first stated in a previous answer.

X Q. 35. The devices are the same for all of the claims, are they not?

A. But one set of devices are shown in the drawings, but the patent teaches how to obtain a maintained effect, though the spring is weakening during the upward movement of the beam.

X Q. 36. Are the combinations of the first three claims operative without the shifting bearing of the fourth claim?

A. I think not.

X Q. 37. Where is the leverage in the Wright spring?

A. The beam and the spring, for example, form the lever in Fig. 4 and the beam in Fig. 5. The spring exerts its force against the periphery of the roller, and is held at the other end.

X Q. 38. The roller is the shifting bearing of the Wright organization, is it not? and is it not shifting, in the fact that it advances toward, or recedes from, the fixed end of the spring when the beam is moved?

A. The point of contact between the spring and the roller forms a shifting bearing, as the invention is illustrated, and as the spring moves on the roller it can be made to approach or recede from the end of the spring.

X Q. 39. If the spring arm of the Wright cultivator was a rigid arm, and the spring or a weight applied to the roller, which in this case would require a sliding attachment up and down on the vertical portion of the arched axle, would not the lifting action then be that of an inclined plane? This supposed structure applies more particularly to Figs. 2 and 4 of the Wright patent.

A. Under the modification, it might be called an inclined plane? I don't know whether the hypothetical machine would work.

X Q. 40. If the 1879 Wright patent had been issued to a stranger instead of to the same patentee, would you not have considered it a complete and perfect anticipation of the patent in suit?

A. This is a question of law. I should not have considered it an anticipation, because the 1881 patent would show an earlier date of filing, and I would have supposed it was the earlier invention, and as it is the broadest patent of the two, I would have been confirmed by this in my view.

X Q. 41. Supposing the two patents stood in the same relation to their respective invention as they do to their dates of issue, would you not then have considered the 1879 patent a complete anticipation of the 1881 patent?

(Objected to by counsel for complainant, as it presents a question of law.)

A. I think I would have thought so if the cross-references or disclaimers in the several patents were out.

X Q. 42. Do you understand that a man could get a patent, say for the double action of the back spring of a jack-knife, which would throw the blade either way when the blade was a quarter open, or between half and full open, that another valid patent could be obtained for throwing the knife back into the handle by the same spring, at any point less than a quarter turn of the blade? Or, in other words, would there, in your opinion, be any difference in actual invention?

(Same objection.)

A. Without admitting that the proposition has any bearing on this case, and that my understanding of the proposition as put is right. I should not think he could.

X Q. 43. Does not the Wright specification, in regard to the requirements of the machine to which the Wright invention may be applied, refer to the requirements of the machine itself, and not to the requirements of the spring?

A. Yes, I think so; the patentee uses the word requirements as implying the essential features of the organization to which his invention is itself applicable.

X Q. 44. In view of the statements of the Wright specification, commencing with line 94, on page 1, where it says that the machine may be of any suitable character, etc., and the statement in line 102, of page 2, that the spring may be any spring, and the statement commencing with line 105, page 2, where it says the invention is designed more partiularly for wheeled cultivators, "it is obvious that it may be applied to various other machines containing substantially the same requirements," do you understand that the Wright invention is limited to its use in connection with a walking straddle-row wheeled cultivator?

A. I have had no occasion to consider any other view, as the defendant's machines come within this limitation, but I do not think the patent is so limited. I think that a machine that has a suitable moving frame on wheels, or runners if you like, and which trails behind it one or more drag-bars which had to be lifted at frequent intervals, might be a machine that would be suitable for the application of the Wright invention.

X Q. 45. Is not the Dalton spring a suitable one to be used in connection with the old cultivator shown in the Wright patent?

A. As a spring alone it might be taken from Dalton, and might be so combined with the machine and with probably additional parts, that the Wright invention could be practiced with it, but it is not adapted to be applied to the Wright cultivator as shown by Dalton and as combined with his plow.

X Q. 46. Does not the Dalton patent relate entirely to lifting devices without any special regard to the kind of plows to be used?

A. It relates to lifting devices in a structere called a gang-plow, but the plow-shares are not shown.

X Q. 47. Is not the Dalton machine, in so far as it is shown and described, a known form of cultivator?

A. It is a device for cultivating the earth, but I should not suppose that such devices were used interchangeable with a cultivator of the kind shown by Wright.

X Q 48. Is it not a common mode of expression to speak of a cultivator of the form shown by Wright, as one having a gang on each side?

A. I have heard shovels referred to as gangs, using it in the sense to express more than one.

X Q. 49. The crank of the axle in the Dalton machine, if used for lifting mold-board plows, would ordinarily be more than six inches, would it not, in order to go to the lowest depth of plowing, and to be sufficiently raised above the ground for transportation purposes?

A. It might be more than six inches, but as I understand it, it would be a matter of inches anyway. If it wasn't six, it might be eight, it might be nine, or something like that.

X Q. 50. If it was two feet, all the change required would be a longer spring, would it not?

A. Yes, a longer spring would be required.

X Q. 51. So far as the spring itself is concerned, why is not the maximum strain on the spring when the plow is down in Wright the same as in Dalton?

A. In both, when the plow of Dalton is down and the shovels of Wright are down, the spring itself is wound up to its tightest. I assume the absence of the depressing effect.

X Q. 52. In both the Wright and Dalton machines, is not some device essential in order to enable the operator to put the spring into action, and for this purpose is not the handle of the Wright machine the full equivalent of lever E of the Dalton machine?

A. It does not seem to me to be so; it is true that in both the spring is put under tension by the operator moving the lever of Dalton and the handle of Wright, and in this broad sense they are alike, but the further over you move the Dalton handle, the greater becomes the effort, while when you move the Wright handles downward the effort diminishes.

X Q. 53. Why is not the last part of your answer the same for the Dalton?

A. Because I understand that the Dalton spring must be strong enough to raise the plows, and if the effort ceased by reason of the weight of the frame, then the springs would never raise the plows. Now, the springs in Dalton have got to be strong enough to raise the plows out of the ground.

X Q. 54. Does not the Dalton spring have a stronger lifting effect, or increased lifting effect, as the frame rises?

A. No. As the frame rises it is brought into a position over its point of support, and is thus easier to elevate, but the spring does not increase its upward strain by reason of an increased leverage and a shifting and changing bearing.

X Q. 55. Your understanding of the Wright patent then is, is it not, that the increasing effect and the increasing strain of the spring mean the same thing?

A. As I understand the question, considering the results upon the mechanism, either term can be used.

X Q. 56. Does not the lifting effect of the spring in the Dalton machine increase as the spring loses tension?

A. In the particular combination in which it is found, a spring might be fitted to Dalton which, though it would move the plows upward during the last half of their movement while it was losing tension, would do this only because the load to be moved was being carried over its point of support, and thus the weakening spring would do the work merely by the lightening of the work imposed.

X Q. 57. In the actual combination shown in the Dalton patent, does not the spring operate with increasing lifting effect, owing to the fact that the weight being supported upon a cranked axle, the weight is sustained more and more upon the axial bearings as the cranks approach a vertical position, so at the last the effect of the spring is greater than it was at the starting, notwithstanding its loss of tension?

A. I don't know from the examination of the Dalton patent. The spring may lose tension in the same proportion as the weight ceases to require effort to move it.

X Q. 58. All the swinging that there is in the Dalton frame is vertical, is it not?

A. Yes.

X Q 59. You spoke of the action of the Dalton spring as being disadvantageous, why do you so consider it?

A. I spoke of it as disadvantageous if arranged in Dalton to give an increasing effect, for there is no necessity in having the spring-power or effect increase as the weiget diminishes. The spring might just as well lose effect as the weight ceases to require the application of power to move it.

X Q. 60. Do you understand that there is an actual increase of spring-power in the Wright machine?

A. No. The spring weakens, but by its increased leverage and the moving bearing its effect on the beam is increased.

X Q. 61. Why is not the Dalton crank a lever upon which the spring has the same effect?

A. For this reason: There is nothing between the spring and the load which increases the effect of the spring upon the load, though the spring is weakening. The load merely gets easier to move.

X Q. 62. The result, however, is the same, is it not?

A. No. Because a weakening spring in Wright is made to have an increasing effect on a practically constant weight, whereas, in Dalton, as I understand it, a weakening spring constantly acts on a decreasing weight.

X Q. 63. Does the Dalton frame weigh any more when it is down than when it is up?

A. Not if you put it on the scales, but to the hand of the spring that one can imagine is grasping the frame, the frame to such a hand weighs nothing at the top when directly over the axle, while it weighs its full weight when it is ninety degrees down from its highest position.

HENRY L. BREVOORT.

Counsel for complainant offers in evidence a certified copy from the records of the Patent Office of the decision of the Examiner in the matter of the interference between George W. Brown and Samuel G. Holyoke v. George Shaver v. W. H Wilde v. C. A. Hague v. E. A. Wright v. W. J. Browne, upon the motion of Brown and Holyoke to dissolve the interference, which is marked by the Examiner, "Complainant's Patent Office Exhibit, motion Brown and Holyoke to Dissolve Interference."

Complainant also offers in evidence certified copy from the records of the Patent Office of the decision of the Examiner in the matter of the interference between George Shaver v. W. J. Browne v. E. A. Wright, on the motion of George Shaver to dissolve the interference, which is marked by the examiner, "Complainant's Patent Office Exhibit, George Shaver to Dissolve Interference."

Complainant also offers in evidence certified copy from the records of the Patent Office of the decision of the Examiner of Interferences between Shaver v. Browne v. Wright, which is marked "Complainant's Exhibit, Patent Office Decision of Examiner of Interferences."

Complainant also offers in evidence certified copy from the records of the Patent Office of the decision of the Examiners-in-Chief, in the matter of the interference between William J. Browne v. Edgar A. Wright, which is marked by the Examiner "Complainant's Patent Office Exhibit, Decision of the Examiners-in-Chief."

Complainant also offers in evidence certified copy from the records of the Patent Office of the file wrapper and contents in the matter of letters patent granted Charles A. Hague, which is marked by the Examiner, "Complainant's Exhibit, Hague File Wrapper and Contents."

Complainant offers in evidence a printed Patent Office copy of the patent to Brown and Holyoke, No. 248,993, dated November 1, 1881, application filed March 2, 1880, the same being marked "Complainant's Patent Office Exhibit, Brown and Holyoke Patent."

Complainant offers in evidence a printed Patent Office copy of United States Letters Patent No. 61,649, granted January 29, 1867, to A. H. Allison, for Improvement in Cultivators, the same being marked "Complainant's Exhibit, Allison Patent, No. 61,649."

Complainant also offers in evidence printed Patent Office copy United States Letters Patent, reissue No. 9,085, granted February 17, 1880, A. H. Allison, for Improvement in Cultivators, the same being marked "Complainant's Exhibit, Allison Reissue Patent, No. 9,085."

Except as to the Hague file and contents and the Allison original and reissue patents, counsel for the defendant objects to the introduction in evidence of each and all of the foregoing exhibits and to the said exhibits, for the reason that they are not in rebuttal of anything offered by the defendants; that they are between parties strangers to the record and therefore irrelevant, incompetent and immaterial, and for the further reason that they have no relation whatever to any of the issues of this cause.

Adjourned, to meet at same place to-morrow, Thursday, April 19, 1888, at 10 o'clock A. M.

R. H. WHITTLESEY,
Special Examiner.

NEW YORK, N. Y., April 19, 1888.

Met pursuant to adjournment. Counsel present as at meeting of yesterday.

Complainant offers in evidence a blue print copy of the drawing attached to the application of W. J. Browne, filed October 2, 1879, which application was put in interference with the application of Wright for the patent in suit, the same being marked "Complainant's Exhibit Blue Print of W. J. Browne's Drawing."

Counsel for defendant objects to the foregoing exhibit as irrelevant, immaterial and incompetent, and waives any objection to the fact that the exhibit is a blue print.

Counsel for defendant, in accordance with the stipulation on page 28 of complainant's printed record, here gives notice that defendant will use at the hearing of this cause the following cross-questions and answers of the expert, Cyrus Kehr, found in his deposition given in the case of this complainant against the David Bradley Manufacturing Company, to-wit: Nos. 7, 9, 13, 20, 21, 32 to 44, both inclusive, 49 to 54, both inclusive, and 65.

Counsel for complainant rests.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

MOTION BROWN & HOLYOKE TO DISSOLVE INTERFERENCE.

Certificate of Patent Office in due form, that the following is a true copy of the decision of the Examiner, July 15, 1880.

George W. Brown and Samuel G. Holyoke,
v.
Geo. Shaver,
v.
W. H. Wilde,
v.
C. A. Hague,
v.
E. A. Wright,
v.
W. J. Browne.

Interference.
Case "A."
Cultivators.
Motion to Dissolve.

This motion was made on the part of Brown & Holyoke to dissolve the interference, on the ground that neither of the parties in interference (except Brown & Holyoke) shows a lifting spring which acts with increasing force on the beam as it is elevated, and that neither of said applicants (except Brown & Holyoke) has the right to make the claim involving said feature. On the day of the hearing the objections were withdrawn as to all the parties except E. A. Wright and W. J. Brown, and upon these two applications the objections were urged before the Examiner.

The applicant, Wright, by his attorney, presented affidavits in support of the efficient operation of his machine, as claimed, with an exhibit illustrating the working of the machine. Brown & Holyoke, by their attorney, presented working machines to illustrate their position.

Regarding the case of W. J. Browne, the spring, as shown in the drawing and model and working machine, and as described, appears to have little or no effect upon the plow beam when at or below its working position, but when the beam is raised, the pully-connection slips upward upon the curved-lever portion H, and by the increase of leverage the spring is enabled to raise the beam and hold it in an elevated position.

In the case of Wright, the beam is acted upon in a less positive manner by the spring than in Brown & Holyoke's machine, but the question in controversy is: Does the spring act upon the beam with increasing force or with greater effect as the beam rises from one fixed position to another through a certain space? In the two modifications shown in Wright's application, the spring in one case is secured upon the arched axle, and in the other case upon the plow beam; the two arrangements being regarded as mere modifications, and so described. It will be conceded that if there is any doubt as to the perfect working of the spring in the manner described and claimed in Wright's case, it is in regard to the arrangement shown in Figs. 2 and 4, and on careful examination and trial, it is found that even this arrangement shows the spring acting upon the beam with increased effect or force for several inches as the pulley moves away from the zero, or dead point, which is situated just beyond the summit of the bend on the portion d2 of the spring. It is observed that the bend at d1 (as shown in drawing and model, as described in specification, and as exhibited in the working machine on the one hand, and by the exhibit model on the other), is intended to be, and is, an easy curve, the "dead point" at which the beam would neither be raised nor depressed, being two or three inches from the summit of the bend; and from that point to the summit and several inches further, the beam is urged upward more or less forcibly according as the pulley bearing is further from, or nearer to, the said "dead point;" then, as the beam rises still further, the spring at last reaches a position in which the beam is in equilibrium, so to speak, and remains suspended—in other words, the spring acts upon the beam for a limited distance in the manner described, and thus fulfills the conditions of the claim fully, and also the mechanical requirements of a working machine of this class.

If the applicant, Wright, were required to demonstrate that his machine would operate as promptly and forcible as Brown & Holyoke's, in order to be entitled to the claim in question, then the claim might be refused, but the spirit of the patent law does not require such a discrimination.

It is found that in one arrangement of Wright's spring, the beam at the "dead point" remains unaffected by the spring, while at a point above the beam is urged upward, and at a point still further up the beam is urged upward with still greater force, and so on. In the other arrangement of the spring the same operation substantially is observed, by the same means, for the same object, and with the same result in kind, though not so positive and conclusive. It appears that Wright is entitled to make the claim in question, and the motion is denied.

OSCAR C. FOX,
Examiner Division I.

July 15, 1880.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

MOTION GEORGE SHAVER TO DISSOLVE INTERFERENCE.

Certificate of Patent Office in due form that the following is a true copy of the decision of the Examiner, August 31, 1880:

George Shaver
v.
W. J. Brown,
v.
E. A. Wright.

Interference
Case "A."
Cultivators.

Motion to dissolve Interference.

This motion is made to dissolve the Interference, on the ground that no interference exists—that the subject matter of the interference, to-wit: *A lifting spring which acts with increasing force on the beam or drag-bar as the latter rises, and vice versa*, is antici-

pated by existing patents; and further, on the ground of irregularity in the declaration of the interference, said patentees (of the unexpired patents) not having been notified.

The patents referred to are:

W. P. Brown, No. 128,701, July 9, 1872.

W. E. Bates, No. 47,693, May 16, 1865.

D. McNabb, No. 45,730, January 3, 1865.

J. Stafford, No. 158,752, January 12, 1875.

(Wheel Cultivators) and—

H. B. Barnard, No. 10,104, February 22, 1870.

J. D. Drake, No. 41,740, February 23, 1864.

C. Edgar, No. 149,296, April 7, 1874, and A. C. Hurst, No. 29,082, July 10, 1860 (horse-rakes).

The patent of Brown shows springs which hold the beams partially suspended while working, but do not increase in force or effect upon the beams to hold them suspended. The effect upon the beams is merely to sustain the rear ends of the beams while they vibrate vertically and laterally in the ground, but when the beams are lifted, there being no change of bearing as in Wright's and others, but only a chain connection, the spring acts with less and less force as the beam rises.

The patent of Bates appears to have no material bearing upon this issue.

NcNabb's patent has no spring as would at first appear. Stafford also appears to have no bearing on the case.

Barnard shows and describes only a "holding-down" spring. Drake shows and describes also a depressing spring only. Edgar shows and describes an automatic apparatus whereby a spring is wound up by the driving wheel, and as a catch is tripped by the operator the spring throws up the teeth to dump the hay. There is no increase of force or effect apparently possible, and none described in this case.

Hurst shows and describes weights applied adjustably to each rake-tooth to hold them down to their work with more or less force, according to the position of the weight upon the tooth, a feature not uncommon now in cultivators and rakes, but not like

the present invention. The patent of Brown, No. 128,701, is the only case cited in which a lifting spring holds the beam suspended to enable the operator to work the plow up and down more easily; and in this case it appears plain that there will be no increase of force or effect as the beam is lifted, and no decrease of force down to zero as the beam falls, as in the present invention.

As to the question of irregularity, no such question exists after it has been shown that the invention is a patentable one, and not anticipated by the references cited.

The motion is denied.

OSCAR C. FOX,
Examiner Division I.

August 31, 1880.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

DECISION OF EXAMINER OF INTERFERENCE.

Certificate of Patent Office in due form, that the following is a true copy of the decision of the Examiner of Interferences, January 3, 1881:

UNITED STATES PATENT OFFICE.

IN RE INTERFERENCE.

Shaver
v.
Browne
v.
Wright.
} *Before the Examiner of Interferences.*

Subject matter: Cultivators.

The Primary Examiner has used the following language in defining the issue in this case:

"In a cultivator, the combination of a vertically swinging drag-bar or beam and a lifting spring which acts with increasing force upon the beam as the latter rises, and *vice versa*."

The object of this combination is to obtain an increasing effect upon the beam as it is raised, and at the same time have the parts so arranged that when the beam is in its normal or working position, little or none of the force of the spring is brought into play.

That the word "force" in the above recited issue is used in a sense synonymous with that of "effect," will be seen by an inspection of the applications of the opposing parties, for in both cases the tension of the spring is greatest when the beam is lowered so that the shovels are in the ground, but at this point the strain is so adjusted that it produces no lifting effect; as the beam is raised, however, the force of the spring is utilized, and although this force necessarily decreases as the tension of the spring diminishes, still this decreasing force is so much more advantageously applied as the upward movement of the beam progresses, that the effect of such force continues to increase until the whole weight of the beam is carried by the spring.

That the invention in controversy is capable of embodiment in many different forms appears from the fact that when this interference was declared no less than six applicants were made parties thereto, each of whom presented devices which varied materially as to the details of construction, and it was to cover the broad ground of a spring which acts with a minimum effect when the beam is down, that the issue herein was made.

Of all the original parties, Browne and Wright alone have filed testimony, and in other respects complied with the office rules, and the contest is accordingly narrowed down to their applications.

Wright testifies to a conception of the invention during the winter of 1876–77, and is partially corroborated as to this date by E. P. Lynch, but it is not until the spring of 1878 that Lynch remembers of receiving a detailed description of the invention. This is not a material point, however, as Browne does not claim to have conceived the invention until February, 1879.

In February, 1878, Wright obtained a cultivator from the Brown Manufacturing Company, of Zanesville, Ohio, and had it sent to the works of the Eagle Manufacturing Company, by which latter company he was employed.

This cultivator was provided with S-shaped lifting springs which were attached to the uprights of the arch, each spring being connected by a link with an *upright* projection from the pipe-box, to which the plow beam was attached.

From this arrangement of parts it will be seen that the effect of the spring was greatest when the beam was in its working position, at the very point where it was desirable that no lifting force should be exerted. To overcome this defect Wright lowered the spring until its free end was on a level with the pipe-box, carried the upright arm or projection backwards until it was parallel with the beam, and connected this arm to the spring by a link adapted to slide in the spring.

By this arrangement of parts the effect of the force of the spring was reversed; i. e., instead of producing the greatest effect when the shovels were in the ground, as is in the original machine, there was a minimum effect at that point and an increasing effect as the beam was raised.

There is no doubt but that by this new arrangement of parts Wright produced a machine which was clearly within the terms of the issue. This conclusion is arrived at not only from a consideration of the testimony of Wright and the witnesses called in his behalf, but also from the result of an actual test of the exhibit machine now in this office. In the course of the test referred to, it was found that a constantly decreasing force on the part of the operator would serve to raise the beam, and it was seen that this result was caused by reason of the fact that an increasing leverage was obtained by the upward movement, and that this increasing leverage more than counteracted the decreasing force of the spring.

It is strennously urged by counsel for Browne that this original machine was at best an unsuccessful and abandoned experiment, and that it did not contain the subject matter of the issue.

It has already been stated that the machine referred to contained devices covered by the terms of the issue, and the record shows that the machine was a practically operative one, and also that Wright was anxious to manufacture machines containing this combination, but was prevented from so doing by reason of his employes fearing that the same would infringe patent No. 190,816, granted W. P. Brown, of Zanesville, Ohio. It may, moreover, be said that it has been repeatedly held that abandonment will not be presumed, but must be conclusively proven. As before stated, Browne does not claim to have conceived the invention until February, 1879, or almost a year after Wright had embodied his idea in a full-sized working machine, and as Wright satisfactorily accounted for his delay in placing his device upon the market, he must be adjudged the prior inventor, and such judgment is accordingly rendered.

J. B. Church,
Examiner of Interferences.

Edward Kent, Jr.,
Acting Assistant.

January 3, 1881.

COMPLAINANT'S PATENT OFFICE EXHIBIT.

DECISION OF EXAMINERS-IN-CHIEF.

Certificate in due form, that the following is a true copy of the decision of the Examier-in-Chief, March 8, 1881.

No. 6,505. U. S. PATENT OFFICE, March 8, 1881.

BEFORE THE EXAMINERS-IN-CHIEF, ON APPEAL.

In the matter of interference between the application of William J. Browne, filed October 2, 1879, and the application of Edgar A. Wright, filed May 23, 1879.

IMPROVEMENTS IN CULTIVATORS.

The matter in interference is declared to be:

"In a cultivator, the combination of a vertically-swinging drag-bar "or beam, and a lifting-spring, which acts with increasing force upon "the beam as the latter rises, and *vice versa*."

Originally, there were several other parties, but all have fallen out, except the above.

Wright came to the office in May 23, and Browne in October, 1879.

Wright's preliminary statement gives the winter of 1876 and 1877, as the date of his conception; and he described it in April, 1877, and made sketches, etc.; made full-sized working device in March and April, 1878, and commenced manufacture and sale of same in May, 1879, and had put 1,500 in use.

Browne says that he conceived in February, 1879, and applied and operated his invention on a cultivator in a shop experiment in the same month, and has since used it, and manufactured others.

The claims made by the parties are intended to be quite broad and generic, but whether they would be construed by the courts as really covering more than the thing produced or not, it is yet evident that a claim apparently more limited for the improvement "as shown," would cover all equivalents.

The devices of the parties are quite unlike in details of construction and arrangement of parts; but they are operated on the same principles, and with like functions and results, and the applications have properly been put in interference.

We have carefully considered the evidence of Wright, and find that it fully sustains his preliminary statement. Wright's improved Brown's cultivator of 1878 as clearly shows the invention as do either of the structures now presented. It is then equivalent.

Not being able to use the Brown cultivator without license and payment of royalty, he took time, and got up, and brought out, the structure now presented.

Wright was the original inventor, and acting all the time in perfect good faith, without knowledge of Browne's operations, and using due diligence, and it would be absurd to hold that he ever abandoned the invention, or that the reduction to practice, and practical successful test upon the Brown machine, was an abandoned experiment.

The dicision of the Examiner of Interferences is affirmed, and priority found in Wright.

R. L. B. CLARKE,

H. H. BATES,

Examiners-in-Chief.

IN THE UNITED STATES PATENT OFFICE.

GEO. H. FRENCH, Sec'y. T. O. SWINEY, Treas. E. P. LYNCH, Prest. and Supt.

EAGLE MANUFACTURING COMPANY.

Davenport, Iowa,

Manufacturers of plows, stalk-cutters, riding and walking cultivators, sulky-plows, harrows, stalk-cutter attachments, sled cultivators, sulky hay rakes.

CASE A.

DAVENPORT, Iowa, June 29, 1880.

In the matter of Interference between application of E. A. Wright, filed May 23, 1879, and others. Subject: Cultivators.

PRELIMINARY STATEMENT OF E. A. WRIGHT.

I conceived the invention defined in the Declaration of Interference, during the winter of 1876 and 1877. Certainly not later than March, 1877.

I described the invention to one or more persons not later than April, 1877.

I made sketches or drawings of the invention as early as April, 1877.

I made a working device of full size between March 23 and April 2, 1878.

I made no models until the one for the Patent Office, in May, 1879.

Between the time of conceiving the invention and making application for patent, I made numerous drawings, illustrations and working devices, embodying the invention in different forms.

The manufacture and sale of machines containing the invention was commenced May 10, 1879, and has continued to the present time, and 1,500 or more machines are now in use.

E. A. WRIGHT.

STATE OF IOWA, } ss.
SCOTT COUNTY. }

E. A. Wright, being duly sworn, makes oath and says, he has read his foregoing statement, and knows the contents thereof, and that the statements therein contained are true, as he verily believes.

E. A. WRIGHT.

Subscribed and sworn to before me, by the said E. A. Wright, this eighth day of July, 1880.

[SEAL] NATH'L. FRENCH,

Notary Public for Scott County, Iowa.

In the matter of the Interference declared between the applications of Geo. Shaver, W. J. Browne and E. A. Wright on cultivators, now pending in the United States Patent Office.

Gentlemen: You are hereby notified that on Friday, October 8, 1880, at 10 o'clock A. M., at the office of Nat. French, Notary Public, Davenport, Iowa, we shall proceed to take the testimony of E. A. Wright, George H. French, George W. French, F. O. Swiney, E. P. Lynch, J. Belken, William Duffin and M. Elbi, all of Davenport, Iowa; of K. Raff, of Muscatine, Iowa, and of such others as we may be able to procure as witnesses on behalf of the said Wright. The examination will continue from day to day until completed. You are invited to attend and cross-examine.

DODGE & SON,
Attorneys for Wright.

Service of this notice acknowledged this thirtieth day of September, 1880.

LOUIS BAGGER & CO.,
Attorneys for Shaver.

Services of this notice acknowledged this fourth day of October, 1880.

COYNE & ELLIOTT.

Before the Commissioner of Patents, in the matter of the Interference declared between the applications of George Shaver, William J. Browne and E. A. Wright for patent for cultivator.

Depositions of witnesses examined in behalf of E. A. Wright, pursuant to the annexed notice and the stipulations of counsel, at the office of Thompson & French, before Peter A. Boyle, Notary Public, in Davenport, Scott county, state of Iowa, commencing on Saturday, October 9, 1880, at two (2) o'clock P. M.

Present: J. G. ELLIOTT, ESQ., on behalf of Browne; P. T. DODGE, on behalf of Wright. No appearance on behalf of Shaver.

E. A. WRIGHT.

E. A. WRIGHT, being duly sworn, does depose and say, in answer to interrogatories proposed to him by P. T. Dodge, counsel for Wright, as follows, to-wit:

Q. 1. What is your name, age, residence and occupation?

A. E. A. Wright; 33 years; traveling man for the Eagle Manufacturing Company, Davenport, Iowa.

Q. 2. Are you the E. A. Wright, one of the parties to this Interference?

A. Yes, sir; I am.

Q. 3. Have you read, and do you understand the issue involved in this Interference?

A. Yes, sir.

Q. 4. State, as nearly as you can, when you conceived the invention forming the issue in this case?

A. During the winter of 1876 and 1877.

Q. 5. How do you fix that date?

A. I remember a conversation with Mr. Lynch, superintendent of the Eagle Manufacturing Company, which occurred when I returned from a trip to Ohio in 1876. My expense book shows the trip to have been in 1876.

Q. 6. When did you first describe the invention to another person?

A. Not later than when I returned from the trip to Ohio above mentioned.

Q. 7. When did you make first drawings or sketches illustrating the invention?

A. Soon after my return from that trip.

Q. 8. State for what purpose they were made, and what became of them?

A.. They were made to convey my ideas to Mr. Lynch. They were destroyed almost immediately.

Q. 9. Why were they destroyed, and how?

A. They were made on a small tablet, say about 2x4 inches, furnished by an insurance company for advertising purposes. As each sheet was covered by marks and scratches they were crumpled up and thrown away.

Q. 10. Were all the drawings and sketches made by you of this invention in controversy made upon the tablet, or not?

A. Most of them were, a few were not.

Q. 11. Why did you fail to preserve these drawings?

A. I did not imagine they would ever be of any use.

Q. 12. State whether you at any time embodied the invention in controversy in a full sized operative machine; and if yea, give the date of the first machine that was completed with the invention therein?

A. I did, between March 23 and April 2, 1878.

Q. 13. State in what way you fix that date?

A. A cultivator purchased or loaned for experimental purposes arrived at our shop February 27, 1878, and that was used to make the first full-sized working machine immediately on my arrival from Indiana, after that date, February 27, 1878.

Q. 14. State in what way you fix the time when the machine was received.

A. The freight bill on it is dated February 25, and our books show that we paid the freight on it February 27, 1878.

Q. 15. How are you enabled to fix the date of the completion of the machine as between March 23 and April 2, 1878?

A. My expense book shows that I was at home at that time, and that is the first time I was at home long enough to do it after the machine arrived; I also know that I did it the first opportunity after the machine did arrive.

Q. 16. Of what make was the machine referred to to which you applied the invention?

A. Brown Manufacturing Company, Zanesville, Ohio.

Q. 17. Was this the same or a different Brown from the one now a party to this Interference?

A. He was a different Brown.

Q. 18. Was the machine constructed or completed between March 23 and April 2, 1878, a successful operative machine, capable of use in the field, or not?

A. It was.

Q. 19. State, if you know, what became of that machine?

A. The Eagle Manufacturing Company shipped it to Columbus, Ohio, about May 31, 1879—that is the date we have it charged on our books—to John Patterson, Columbus, Ohio. On September 2, 1880, I went to Columbus, and went to the farmer to whom Patterson had sold it, and secured the loan of it for the

purpose of showing it on this particular occasion, and I agreed to return it to him as soon as we were through with it. I agreed further, that he should have it before Christmas. I have it here on exhibit now.

Q. 20. At the time the machine was sold to Patterson did it contain the device in controversy?

A. No; I had removed a part of it.

Q. 21. Why was it removed?

A. Well, I suppose it had been removed long before shipment, because we were not selling machines with that device on.

Q. 22. Did the machine in question have the device in Interference applied to one or both beams at the time you originally improved or completed the machine?

A. One only.

Q. 23. When you first received the machine was it provided with lifting springs,or not?

A. It was.

Q. 24. In what way did those springs act?

A. With a lifting force on the beam always, and lifting the most when the beam was most depressed.

(Counsel for Wright offers in evidence an official printed copy of United States Letters Patent, No. 190,816, to W. P. Brown, May 15, 1877, and the Notary marks the same "Wright's Exhibit A.")

Q. 25. Examine the Brown patent, "Exhibit A," and state whether the arrangement of lifting springs represented therein is similar to or different from that of the cultivator as you originally obtained it?

A. They are similar; exactly alike, as near as I can discern.

Q. 26. State what object you had in changing the machine?

A. It was to improve its working qualities, by arranging the spring and other parts in such manner that the spring would assist the operator in handling the beams, but would not exert a lifting strain on them when the beams are in operative position; in other words, to make a spring that would act with increased lifting force as the beam rises, and decreased lifting force as the beam descends.

Q. 27. State what change or alteration you made in the original machine to secure the end sought?

A. Referring to "Exhibit A," I turned the arm "M" back until it was parallel with beam "I." I lowered the spring marked "N" until its lower end was as low or on a level with beams "I" and arm "N," and inserted a connecting link not shown in the exhibit drawing, with one end secured in the end of arm "M," and the other end sliding vertically on the spring "N," and that secured the desired result.

Q 28. State whether or not the machine before you is constructed, as regards the invention in controversy, in the identical manner in which it existed between March 23 and April 2, 1878, with your improvement thereon.

A. It is.

Q. 29. Examine the four (4) photographs now presented to you, and state if you know what they represent.

A. They represent this machine that we are talking about, the machine that is here, exactly as it appeared between March 3 and April 2, 1878. These photographs were taken the day before yesterday, for use in this case.

(Photographs offered in evidence and marked "Wright's Exhibits first machine, No. one (1), two (2), three (3), and four (4).")

Q. 30. Referring to the Exhibit Photographs, specify by letter or otherwise thereon the side of the machine on which your device appears.

A. On the side marked "A."

Q. 31. What spring is it that appears on the opposite side of the machine?

A. The N. P. Brown, Zanesville, Ohio. It is the same that was on the machine when received the first time.

Q. 32 Referring to your arrangement of the spring upon the machine as shown in the Exhibit Photographs, describe the mode of action and the effect produced.

A. As the beam rises above its operative position, the forward end of the connecting link slides upward on the spring, thus increasing the lifting force of the spring as the beam rises, and decreasing it as the beam descends to its operative position.

Q. 33. Referring to the link which forms the connection between the straining spring and the lifting arm or lever of the cultivator, state whether the link acts with a continuous or a changeable advantage or leverage upon the arm as the beam rises or falls—that is to say, does the change in the relative position of the lever and the link vary the effect of the spring upon the beam or not?

(Objected to by counsel for Browne, so far as it relates to "advantage," for the reason that it has not been shown that there is any advantage in connecting the beam in the above described manner.)

A. It does.

Q 34. State whether or not machines similar to that represented in the Exhibit Photographs, with your invention thereon, in the peculiar form shown, have been manufactured for sale by you or your assignees.

A. They have not.

Q 35. State why not.

A. For the reason that N. P. Brown owns a patent covering the arm or projection on the pipe box— marked "M" on "Exhibit A" —and has warned us not to use it.

Q. 36. Referring to the machine represented in the Exhibit Photographs, is the link now shown therein the one which was in the machine at the time you originally improved it in 1878?

(Counsel for Brown denies that the device shown is an improved machine, and objects to the introduction of words to that effect in the interrogatories propounded by counsel for Wright).

A. It is not, but it is exactly like it.

Q. 37. State whether you can [can] produce the original link, and if not, why not?

A. I cannot; I have failed to find it after diligent search.

Q. 38. How does it happen that the original link was not preserved?

A. I don't know how it happened; such things are usually hung about the shop. The boys in cleaning up the shop are liable to throw such a thing as that was in the scrap pile any time.

Q. 39 Is the arrangement represented in the Exhibit Photogtaphs the only one devised by you embracing the invention in controversy or not?

A. It is not; I have made several different devices embodying the invention.

Q. 40. State briefly, and in a general way, what steps you have taken to develop and introduce your invention since the construction of the original machine in March or April, 1878.

A. The first step I took after completing the machine in March was to examine Brown's patent, and discovered that we would have to pay him royalty if we made it in that form. Continuously after that Mr. Lynch and myself, whenever we were together and an opportunity afforded it, made drawings and sketches, all with a view of embodying the invention in some device not covered by other patents. Early in May, or before, I made a drawing of the device shown in our present application, and soon after completed machines with that device, and have continued to manufacture and sell them to the present day.

Q. 41. At the time you commenced preparations to put upon the market machines embodying the invention in controversy had you knowledge that any other person or persons were claiming, using or introducing to use the invention in controversy?

A. I had not.

Q. 42. Referring again to the original machine of 1878, state whether any person or persons saw the machine with the improvement thereon at or about the time you first completed it; if so, name such as you can remember.

A. E. P. Lynch, George H. French, George W. French, A K. Raff, Monroe Ebi, Henry Kastinmacher, Mr. Osborne and others saw the machine.

Q. 43. State whether or not the machine was described and operated for said persons, or either of them, at the time referred to?

A. It was described and handled on the floor for all of them.

Q. 44. Did you at any time previous to your application for a patent now in interference have the intention of abandoning the same?

A. No; I never made a drawing or a sketch or device that did not embody this invention.

Examination of witness adjourned to Monday, October 11, 1880, at 10 o'clock A. M.

Pursuant to adjournment, the same parties being present, E. A. Wright, in continuation of his examination, deposes as follows:

Q. 45. Referring to the Exhibit Photographs Nos. 2 and 4, the suspending hook upon that side of the machine to which your device is applied appears to stand below the point to which the beam is raised. Explain this apparent lowness of the hook.

A. The tongue is bolted to the arch lower than is usual. I lowered the tongue for the purpose of getting the spring lower, consequently the hook is nearer the ground than is usual.

Q. 46. Referring to the drawings mentioned in the tenth interrogatory, which were not made upon the small tablet, can you produce those drawings, or either of them?

(Objected to by counsel for Browne, for the reason that the witness after substantially testifying in answer to question ten that a few were made other than upon the tablet, in answer to question eleven he substantially states that all of these drawings were destroyed; and notice is hereby given that at the hearing of this cause a motion will be made to strike out of the evidence any drawings or subject matter relating thereto alleged to have been made at or near that time).

A. I can produce one of them. I can identify this drawing now in my hand as having been made by myself.

(Drawing offered in evidence, and marked "Wright's Exhibit No. 6")

Q. 47. State when this drawing was made.

A. It was made between March 23 and April 2, 1878.

Q. 48. At the time of your answer to interrogatories Nos. 9, 10, and 11, were you aware of the existence of this drawing "Exhibit No. 6"?

A. I was not.

Q. 49. When and where did you come to a knowledge of it?

A. I discovered it in the hands of Mr. P. T. Dodge, my attorney, this morning.

Q. 50. State if you now know how he obtained possession of the drawing

A. Only by what he tells me, that I sent it to him among other papers.

(P. T. Dodge, counsel for Wright, states that the drawing "Exhibit 6" was received by him from Mr. Wright, or the Eagle Manufacturing Co., a number of months since, and that it has been in his possession from that time to the present day; that it was placed among his file of papers and overlooked and

forgotten by him until this morning, when it was discovered among his papers and presented to Mr. Wright for examination; further, that so far as he is aware, Mr. Wright was not aware of the existence of the drawing until discovery named; further, that he [is] unable at the present time to fix upon the exact date when he originally received the drawing, but is inclined to believe, from the pencil note thereon in his own handwriting, that it was in the month of June, 1880).

(It is stipulated by counsel that the foregoing statement shall be accepted as of the same force and effect as if made under oath).

Q. 51. Referring to the drawing "Exhibit 6," state what it represents.

A. A cultivator spring and attachments to an arm on a pipe box, which is part of a cultivator coupling.

Q. 52. Describe, briefly, its mode of action.

(The letters A to F are applied by the notary on the drawing).

A. The arm "F" is parallel, or nearly so, with the beams of the cultivator When the beams are raised above their operative position, the roller "B" rolls up the spring; when the beams are lowered to an operative position it rolls down the spring, thus giving the spring an increased lifting force as the beam rises, and decreased lifting force as it descends.

Q. 53. In your answer to interrogatories 5, 6, and 7, you refer to sketches of and conversations relating to the invention in controversy, fixing the same in the year 1876; in your preliminary statement you say that the invention was described to others, and sketches made as *early* as 1877; how do you reconcile the statement and the answers?

A. When I made my preliminary statement I said as early as April, 1877, because I knew it was before that date, and I put it late enough to be sure; since making the preliminary statement, I have examined my expense book, and find that I arrived home on October 4, 1876, and I know that it was very soon after that date, say within one week, that I described this invention to Mr Lynch. I do not mean to say this particular device, but a spring embodying this invention.

Q. 54. Why or for what reason do you connect the conversation regarding springs with your trip to Ohio in 1876?

A. The particular trip we have been talking about alludes to one I made to Zanesville, Ohio, to see one N. P. Brown, inventor of another cultivator spring, which he patented in 1872, and I know that it was on my return from that particular trip that I described to Mr. Lynch Mr. Brown's ideas about springs, and told him how I thought they should be improved.

Q. 55. Referring again to the original machine as constructed or improved by you between March 23 and April 2, 1878, state why the machine was sold—I mean the Brown cultivator.

A. It was bought for experimental purposes, and we got through with it.

Q. 56. At the time you sold this machine were you engaged in the manufacture and sale of machines involving the invention in controversy or not?

A. Yes, sir; we have sold a good many.

Q. 57. Had you at that time any knowledge that litigation involving the invention in controversy would arise, or that the machine would be needed in evidence?

A. I had not.

Q. 58. Referring to your answer to interrogatory 20 and 21, state, if you can now remember, why the original device made by you was removed from the Brown machine?

A. I can. After I had completed the device shown in the application for this patent we wanted to try it in the field, and at the same time try the Brown cultivator with his device, and compare their merits; so we fixed it up again as it was originally received, and tried the two cultivators side by side in the field, and my impression is that my device was removed at that time and for that purpose.

Q. 59. Referring to your answer to interrogatory 26, state what you mean by the expression "lifting strain."

A. In answer 26 I referred to a spring which would change its lifting strain on the beams, and which would continue to lift on the beams more or less, according to its adjustment. It may lift all the time or it may cease lifting. The idea was to construct a spring with a changeable lifting strain.

Q. 60. Referring to answer 27, state what you mean by the word "parallel" as there employed.

A. I mean level, horizontal, or nearly so. I did not mean to say that it was necessary for it to be absolutely parallel.

Q. 61. Referring to your answer 33, state the effect or result of the changing action of the link due to the changing relations of the link and arm or lever.

A. As the beams and arms rise the angle formed by the arm and the link increases or opens, and will thus give the spring an increased leverage and lifting force. It is not absolutely necessary that the front end of the connecting link should rise on the spring to produce this effect.

Q. 62. Referring to the original Brown machine represented in the Exhibit Photographs, state whether or not, when you procured it on the 2d of September, 1880, for use in this case, the owner offered to sell it to you.

A. No, he refused to sell it to me. It was with great difficulty that I induced him to loan it to me, I had to pay him $5 for the use of it, and guarantee to return it in good order. I had, also, to get Mr. Patterson to guarantee that it would be returned in good order.

Q. 63. During the time between your invention of the matter in interference, and the time the same was introduced into market, state what your engagements were in a business way, and what opportunities you had for working upon and developing the same.

A. I had been traveling for the Eagle Manufacturing Company, and my opportunities for the completion of the machine were not good. I was away from home most all the time.

Q. 64. State whether machines embodying the invention in controversy have been made and sold by you, your licensees or assignees, and, if so, state when such sale commenced.

A. Our sales commenced about May 10, 1879, the book-keeper can tell exactly the date. I don't know how many we have sold, I guess about 2,000 or 3,000. We received pay from parties that we have licensed to make them for 6,000 pairs.

Q. 65. Of what style or pattern were these devices?

A. These were all of the devices shown on my application now in interference.

Q. 66. In answer 9, you speak of the drawings upon the tablet being crumpled up and thrown away. In answer 10, you speak of additional drawings which were not upon the tablet. Do you mean to say that all drawings made by you were destroyed; if not, to what drawings do you refer?

(Objected to by counsel for Brown, for the reason that it does not appear from the interrogatories or answers referred to, that drawings other than those upon the tablet existed at the time that the tablet drawings were destroyed, and that it is an attempt to construe the answer of the witness differently from what it appeared upon the record at that time.)

A. I mean to say that the tablet drawings were crumpled up and thrown away, and there was no special effort made to save any drawings. At the time I made that answer I was not aware that any of the drawings were in existence or could be found.

Cross-examined.

X Q. 1. Referring to Q. 5, please state what conversation you had with Mr. Lynch

A. It was long, I can't remember exact words, but we talked about springs and about cultivator couplings and about the Slemmon's patent. A cultivator company of which Brown, of Zanesville, was a member, were making couplings that infringed our patents. We talked about all the things, and as I had talked to Brown about springs, I told Mr. Lynch how I thought I could improve upon his ideas about springs.

X Q. 2. When did this conversation take place?

A. Immediately upon my return from that trip and daily thereafter, October 4, 1876, for a week, as nearly as I can remember.

X Q. 3. Did this conversation take place the first day after you returned from that trip?

A. Some of it did. In reference to springs.

X Q. 4. What conversation did you have in reference to springs?

A. I remember telling him that if I were to make a spring I would not have it lifting on the beams the hardest when they were in an operative position, or words to that effect. I told him that that was the fault of the springs that Brown had been making, and I made a sketch, either then or certainly not later than the Sunday following, of a spring that would remedy this defect, and showed it to Mr. Lynch.

X Q. 5. Did you have any conversation with Mr. Lynch in regard to springs prior to October 4, 1876; and, if so, please state it?

A. I had a number of them, even as early as 1874. I don't remember what they were, more than to tell him or talk to him in a business way regarding cultivator springs; there was then upon the market one cultivator with springs with which I came frequently in contact.

X Q. 6 At that time of your conversation with Mr. Lynch, on October 4, 1876, did you have any definite idea of the invention in controversy?

A. Yes, I did. I think I made a drawing that day. I am sure I described to him a way of making a spring embodying the invention in controversy.

X Q. 7. Will you please make a sketch of what you showed him?

A. Yes, I present a sketch as near like the one I showed Mr. Lynch as I recollect, and I think it is exact. It is made hurriedly, and without tools or a solid place to lay the paper.

(Sketch presented and marked "Exhibit 7.")

X Q. 8. Please describe the construction and operation of the parts which you show in "Exhibit 7."

A. The sketch shows the beam near its lowest position; if lowered until the end of the spring marked "E," and the fulcrum "C" and the point "B" are in a straight line with each other, then the spring "A" could have no lifting force on the beam; as the beam rises above that point the spring will commence exerting a lifting force on the beam, which will continue with increased lifting effect, until the force of the spring is almost expended. In explanation, will state that the bale lettered "F" is fixed to the axle by set screws "D."

X Q. 9. Is the spring expanded or contracted as the beam is being raised?

A. Expanded.

X Q. 10. Do you consider the device shown as practicable?

A. I think it is better than some others now in use. Of course it is not free from objections. The lateral movement of the beam would

be affected by this spring; that is the reason I think our present device is better, as it does not affect the lateral movement of the beams whatever.

X Q. 11. How does it affect the lateral movement of the beams?

A. If the beam was moved laterally it would have a tendency to prevent its coming back to its normal or natural position. That is a self-evident fact. I can't explain it plainer than the drawing shows it.

X Q. 12. Referring to "Exhibit 6," is there any mark or peculiarity other than the drawing itself by which you are enabled to identify the sheet sent to Mr. Dodge?

A. The small letters a, b and c are in my handwriting; those are the only marks other than the drawing itself by which I can identify it.

X Q. 13. What peculiar formation have those letters to enable you to identify them as your own?

A. They are my own peculiar formation, and I think would know them on anything.

X Q. 14. Is there any peculiarity about the lines of the drawing which enables you to identify it as your drawing?

A. Taken as a whole I recognize it without difficulty as my own.

X Q. 15. How do you fix the date of making this drawing?

A. I remember distinctly making the drawing during the same days that I was working at the cultivator.

X Q. 16. When did you commence working upon the cultivator?

A. About March 23, 1878.

X Q. 17. Was it before or after this date that the drawings upon the tablet were destroyed?

A. Part before and part after.

X Q. 18. State from what books you have refreshed your memory in regard to dates set forth in your direct examination.

A. From my diary and expense books. I keep my expense account in a diary.

X Q. 19. In what order do you keep your memorandums in your diary and expense book?

A. In regular and consecutive order.

X Q. 20. Are there any memorandums in either or both of these books relative to the device shown in exhibit marked "Wright's Original Machine, Photograph."

A. Yes, sir; in the space printed Tuesday, March 26, 1878, I have written a claim from Brown's patent, which covers a part of this device, and it was written on that day. Mr. Lynch sent me to Griswold college for the purpose of getting that claim, or a copy of it, from the records on file there.

X Q. 21. Is there any other memorandum in regard to it?

A. I don't see any.

X Q. 22. Does this memorandum refer directly or indirectly to your peculiar construction?

A. I don't think it refers at all to my peculiar construction.

X Q. 23. Was the cultivator which you received February 25, 1878, packed or wrapped in any manner?

A. I don't know.

X Q. 24. Had you had any of the Brown cultivators in your shop previous to that date?

A. That is the only cultivator of Brown's make that has ever been in or about our shop to my knowledge.

X Q. 25. Is there any peculiar mark about the cultivator now before you that enables you to distinguish that cultivator from any other of the same make?

A. One of the braces was bent in a peculiar manner the first time we had it, and I thought I could recognize that bend when it was received the last time. The brace on the left hand side was bent in a little to allow the link to pass. It was also bent when we received it the second time, and I think it was the same old bend. I recognize no other marks at present.

X Q. 26. What evidence had you that the machine constructed between March 23d and April 2, 1878, was a successful operating machine, as set forth in answer to direct Q. 18.

A. I know of my own knowledge of cultivators that it would be; and other competent persons to whom it has been shown have told me that in their judgment it would work in the field all right.

X Q. 27. Did you try this particular machine in the field at any time between those dates and the time you filed the application embodying the subject matter of this interference?

A. Not when my device was on it. But we did use it as it was originally received, in order to compare the merits of the device shown in this application for a patent with those of the Brown cultivator.

Adjourned to Tuesday morning, October 12, 1880, at 9 o'clock A. M.

Pursuant to adjournment, the same parties being present, E. A. Wright, in continuation of his examination deposes as follows:

X Q. 28. In answer to X Q. 20, you state that in substance, that your memorandum book shows a claim from Brown's patent which covers a part of this device. Is there anything in that claim that refers to any part of your invention?

A. Yes, sir; there is. The invention was embodied in the device shown in Exhibit Photographs, and in the original machine

from which they were taken, and in that device the invention consisted of a combination of a pipe-box having an arm which was adapted to co-operate with the spring, and a connecting link and a spring, and this claim mentioned in my memorandum book does relate to and have bearing on this device.

X Q. 29. Is the claim in question an exact copy of the one in Brown's patent marked "Exhibit A?"

A. It reads in my diary and expense book "the pipe-box, provided with a projection adapted to co-operate wih a spring or weight, or the draft to rock the said pipe-box." This, I see, is an exact copy of the claim in the patent, as far as it goes, but is not the whole claim. The balance of the claim reads "against or with the weight of the rear cultivators or plows, substantially as and for the purposes described."

X Q. 30. How soon after completing the machine shown in Exhibit Photographs Wright's Original Machine, did you discover that your device was an infringement of Brown's Patent 190,816, "Exhibit A?"

A. I knew it before I made the machine.

X Q. 31. From what source did you know it?

A. I had seen the patent before, and machines made under it, and had talked with the inventor.

X Q. 32. Had you had any conversation, at the time you made up your mind that it was an infringement, with a patent expert, in regard to the scope of the claim in question?

A. I had with one whom I consider sufficiently expert to fully understand and comprehend the point at issue. I allude to Mr. Lynch. I consider myself better than ordinarily posted on cultivator patents, having given them considerable attention for the past eight years.

X Q. 33. Are you positive of your ability to construe the claim referred to as to its scope?

A. Yes, I am. I consider it a very simple question.

X Q. 34. State what is, in your opinion, the broadest construction that can be consistently given to this claim.

(Objection by counsel for Wright, for the reason that the witness is not called or examined in chief in the capacity of an expert on legal questions, and counsel for Brown is notified that he must treat the witness as his own as to matters involved in the foregoing question. Further, counsel instructs the witness that he may answer the question or decline to do so, at his own pleasure.)

A. Its original construction, just as it reads.

X Q. 35. When was it, after satisfying yourself that your invention was an infringement of Brown's Patent No. 190,816, that you decided not to manufacture them for that reason?

A. I have no means of knowing.

X Q. 36. Did you make more than one device similar to that shown in the exhibit and in the photographs of the same, marked Wright's Original Machine?

A. I did not.

X Q. 37. Why was it you did not?

A. One was sufficient for all experimental purposes, or practical, either.

X Q. 38. Was the drawing marked "Exhibit 6" finished before or after the machine in question?

(Objected to by counsel for Wright, as having been twice answered already.)

A. It was made during the same days we were working at the machine. My recollection is it was made or finished after the machine was completed.

X Q. 39. How soon after this memorandum of Brown's claim was made by you, did you hold a conversation with Mr. Lynch in regard to it?

A. In all probability the same day or the next day. We talked about it before and after, both.

X Q. 40. For what purpose did you copy this claim?

A. Simply that I might have its exact words.

X Q. 41. Did you know the substance of the claim before you made the examination at the time you copied it?

A. I did.

X Q. 42. Referring to exhibit photographs, with what force does the spring act upon the beam with your attachment, as shown in No. 3?

A. With a little or no lifting force.

X Q. 43. How do you explain this?

A. If both ends of the link and the center of the axle were in an exact straight line, there would be no lifting force exerted on the beam; if the center of the axle is below a straight line from one end of the link to the other, there will be a lifting strain on the beam. The further the center of the axle is below the straight line, the greater the lifting strain will be until the power of the spring is exhausted or nearly exhausted, and *vice versa* all the way through.

X Q. 45. Of what was the link made in your original machine which connects the spring with the horizontal hook arm?

A. Wrought iron. I think it was ⅜ round.

X Q. 46. What is the result derived from providing this arm with a bend corresponding to the curvature of the axle box, as shown in Fig. 3 of the exhibit photographs forming your exhibit of Wright's original machine photographs?

A. It allows the beams to be depressed into dead furrows or inequalities of the ground.

X Q. 47. If this link were straight instead of curved, as shown in the photograph referred to, would the link travel up the spring as the beam is raised?

A. Yes, exactly the same.

X Q. 48. Would it commence its movement as soon as the beam begins to rise above a horizontal position?

A. In the first place, if the link was straight it could not possibly have both its ends in the same relative position to the center of the axle that it now has, as shown in Exhibit Photograph 3; the upward movement of the link on the spring will commence sooner or later, according to the shape and position of the lower end of the spring and amount of tension on the spring.

X Q. 49. In your original machine was the shank of the hook arm to which the link is attached inclined, as shown in Exhibit Photograph No. 3?

A. We tried it in several positions, higher and lower, and in a horizontal position. By shank, I understand the body of the arm.

X Q. 50. What position of the shank do you consider preferable to attain the result set forth in the subject-matter of this Interference?

A. There is no difference between a horizontal position or one with the end of the arm either a little higher or a little lower, but the curvature in the spring must be made to correspond with these different positions, in order that they should all work exactly alike.

X Q. 51. Do you refer to the upper or lower curvature of the spring?

A. Lower.

X Q. 52. If the curvature of the lower end of the spring were greater than shown in the Exhibit Photographs referred to, what effect would it have upon the operation of the link shown in No. 3 of the Exhibit photographs?

A. Other parts remaining the same, the forward end of the link would not drop quite so low, and it would commence rising quicker when the beams raised.

X Q. 53. Explain why the link would not drop so far, as stated in answer to the last interrogatory?

A. Because the spring is curved more.

X Q. 54. Taking your construction, as shown in the Exhibit Photographs, will the link commence its upward sliding movement upon the spring as soon as the beam is released from its operative position?

A. No; not immediately.

X Q. 55. State why it will not?

A. It will commence sooner or later, according to the tension of the spring, the amount of friction, and the curvature of the lower end of the spring.

X Q. 56. Supposing the position of the hook and the spring to be the same as shown in the Exhibit Photographs, and the sleeve and axle to be slotted, and the link straight, that is to say, so that the link may be in a straight line between the spring, and moving freely in the slot, would the link begin to travel up the spring as soon as the beam is elevated above a horizontal position?

A. That change would make no difference whatever in the action of any or all the parts; it would act exactly as I have described in the question previous.

X Q. 57. As the beam is raised from its operative position is the operation of the link upon the spring in anywise affected by the sleeve upon which the link rests?

(Objected to by counsel for Wright, it not appearing that the link does rest upon the sleeve.)

A. I think not.

X Q. 58. What movement, besides an upward movement, has the link as the beam is raised?

A. It has a forward movement; the rear end of the link moves in the arc of a circle about the cultivator axle.

X Q. 59. Explain what you mean by the forward movement of the link?

A. I mean that the link occupies a position further forward, or in front of the cultivator axle when the beams are raised than it does when they are lowered.

X Q. 60. At what moment, in lifting the beam, does this forword movement commence?

A. The moment the rear end of the link passes a point level with the cultivator axle.

X Q. 61. When the tongue is in a horizontal position what position relative thereto is the link when the beam is at its highest elevation?

A. It is parallel or nearly so, its position depending upon the amount of friction and curvature in the spring.

X Q. 62. Do you mean by parallel that the link is in a parallel horizontal plane with the tongue when in this position?

A. Yes; but a much lower one.

X Q. 63. Referring to cross-interrogatories 48 and 55 you substantially state that the action or movement of the link is dependent, among other things, upon the tension and curvatures of the spring. Is the spring in the exhibit cultivator shown in exhibit photographs of substantially of the same tension and curvature as the one in your original machine?

(Objected to by counsel for Wright, for the reason that the interrogatories referred to had relation to an imaginary or hypothetical case presented by counsel for Brown.)

A. Yes, substantially; but they are a little weaker, having been in use for some time.

X Q. 64. What knowledge have you of the use the spring has had?

A. They were operated in the field during the spring of 1880, and used to attend the crop of the farmer who owns the cultivator. The farmer who owns the cultivator told me so.

X Q. 65. Take hold of the cultivator beam, and state how high you are able to lift it before the beam will be supported by the spring—that is, lift the beam from a horizontal position with the tongue in a horizontal position?

A. I have tried it with the tongue, rising a little at the forward end above a horizontal position, the front end being about a proper height for horses' necks, and find the beam will suspend itself at an angle of about twenty-seven degrees above the horizontal, as measured by a protractor.

X Q. 66. Why does the beam remain suspended at that angle?

A. The tension and strength of the spring was just sufficient to hold it suspended at that point.

X Q. 67. In the position the beam is suspended, at what angle to each other are two lines, one drawn from say two (2) inches above the bearing of the link on the spring down through the spring to three (3) inches below the link, and a straight line drawn from the bearing point of the link upon the spring to the bearing of the link upon the hook arm?

A. About ninety degrees, or a right angle?

X Q. 68. Why is it when you again lift the beam it must be moved some distance upwardly before the link will travel up the spring?

A. The link and spring are both rough, and the spring is too near straight.

X Q. 69. If any, what resistance do you have to overcome to cause the link to travel upwardly on the spring?

A. The natural friction between the link and the spring.

X Q. 70. If you lift the beam steadily from a horizontal to its highest position will the link travel continuously and without intermission to the position it assumes when the beam has reached the limit of its upward stroke?

A. Not when the link and spring are rough, as they now are.

X Q. 71. What precaution, if any, have you taken to overcome the friction between the link and spring you have just been operating?

A. It is the paint that is on the spring that makes it stick now. I tried to overcome it with grease, but that did no good. The link does not fit the spring, it binds in the corners.

X Q. 72. Would the friction be greater or less if, instead of binding in the corners, the front end of the link rested flat against the face of the spring?

A. Friction is least when the full face has equal bearing.

X Q. 73. Examine the Exhibit Photographs, and state whether or not the link shown in the operating machine before you is the same in construction as the one shown in said photographs?

A. Yes, the photographs were taken from it.

X Q. 74. State where the Exhibit machine was kept between the adjournment Saturday evening and the commencement of our afternoon session of the following Monday?

A. It was taken to the warehouse of the Eagle Manufacturing Co. to prevent boys from tampering with it over Sunday. Our shipping clerk snpposed it was out in the street and sent the teamster for it; the teamster told him that he had left it in the street, is the reason he did it.

(Counsel for Brown requests the officer to remove the link above referred to, and to lay the link upon the record and trace the same in two different positions, and to furnish a second copy of the same to counsel for Browne.)

(Tracing made by Notary from the link, as requested by counsel for Browne.)

X Q. 75. Examine the photographs, and state whether or not the link shown in figure 3 rests upon the sleeve or pipe-box.

A. It looks as though it does not quite touch the box, but it may; I can't tell certain from the photographs.

X Q. 76. Of what size of rod is the detached link lying before you, and of what kind of iron?

A. It is ⅜ round wrought iron.

X Q. 77. Referring to direct interrogatory and answer 44, what do you understand the term "*abandonment*," as used in reference to your invention, to mean?

A. I mean that I never gave up the idea, or that I never ceased working when opportunity afforded on a spring which would act with decreasing force as the beam descends.

X Q. 78. After producing the device shown in the Exhibit Photographs, did you experiment further upon the Brown machine before you?

A. I do not remember that I did, except to try it as it originally was. My experiments after that were upon other cultivators.

X Q. 79. In your further experiments did you use a link similar to the one shown in the Exhibit Photographs for connecting the beam with the free end of a spring?

A. I never made a link similar to that, but made drawings containing a link similar to that one.

X Q. 80. Have you those drawings? If not, state where they are.

A. "Exhibit 6" on file is one of them. I have no knowledge where the others are.

X Q. 81. When did you reduce the invention to practice shown in the application upon which the present interference is had—that is to say, the specific devices shown in said application as a whole?

A. We commenced selling machines containing that specific device early in May, 1879. I can't give the exact date the first machine was completed with that device.

X Q. 82. Did you make any model or drawing of the same? If so, state when.

A. I made no model until after we had made full sized machines and sold them, but had made drawings previous. I can't tell when the first drawing of that device was made.

X Q. 83. In answer to X Q. 25 you state that one of the braces was bent in a peculiar manner, was the brace in the same condition when the Exhibit Photographs were taken?

A. It was.

X Q. 84. State how it is bent?

A. It is bent in slightly, to allow the link to pass.

X Q. 85. Referring to the drawing marked "Exhibit 6" when did you put the small letters "a," "b," "c," upon it?

A. I have no recollection.

X. Q. 86. Can you state about when?

A. I have no recollection of putting them upon it at all.

X Q. 87. For what purpose were they put there?

A. I do not know.

X Q. 88. Have you an interest in the invention for which the application was filed and upon which this interference is declared?

A. I suppose I have now, but have made an agreement to assign it to the Eagle Manufacturing Co. I am not a member of that company.

Re-Direct Examination.

Q. 67. Referring to the original machine of 1878, and to the Exhibit Photographs, is it necessary that the link shall slide upon the spring in order to secure an increased lifting effect upon the beam as the latter rises?

A. It is not; the same effect would be produced if the link did not slide, but not so marked.

Q. 68. As a matter of fact, does not the link slide upward automatically on the spring when the beam is lifted in the manner in which it would be lifted by an operator in the field.

(Objected to, as leading.)

A. It does.

Q. 69. Referring to the machine before you, represented in Exhibit Photographs, state whether you have tested the lifting effect of the spring upon the beam by means of a scale or measuring instrument. If yea, state with what result.

A. I have, by means of a spring balance, and find it requires a lift of fourteen and a half (14½) pounds to start the beam in an upward movement. It requires twelve (12) pounds to hold it in suspension after it has been raised a part of the way up, ten (10) pounds when it is further up, and continues to decrease until the beam remains in suspension by the spring alone.

Q. 70. State whether you have made a like test when the end of the link was fixed so that it could not slide upon the spring; and, if so, with what effect?

A. I have; the effect is exactly the same, excepting the spring does not increase its lifting force so rapidly as when the front end of the link is allowed to slide.

Q. 71. Referring to your answer to X Q. 71, state whether the machine before you has, at any time during the course of this examination, been in an oiled, greased, or specially prepared condition to facilitate the sliding of the link upon the spring.

A. There has been no special preparation that I know of.

Q. 72. State, if you know, what the devices now presented to you are.

A. They are cultivator springs and attachments, which were devised by myself. I did part of the work on them; the hands in the shop did the other part of the work on them.

Q. 73. Are these of the number of working devices embodying the invention in controversy referred to in your preliminary statement?

A. Yes.

(Devices offered in evidence, and marked "Wright's Exhibit 8.")

Cross Examined.

X Q 89. In the machine referred to in re-direct interrogatory 67, did and does the link slide or jump when steadily lifting the beam?

A. It slides.

X Q. 90. Why does the link catch one or more times before the beam reaches its highest position?

A. It does not always; this particular link on exhibition, I have before stated, is a duplicate of the original link, and was made hurriedly, and does not work as smooth as a nicely finished one would.

X Q. 91. Does the spring act with an increasing power upon the beam at all times, while the [the] beam is being raised from its lowest to its highest position?

A. It does until the force of the spring is almost expended, that is, when the beam is sustained in suspension.

X Q. 92. Why, then, is it when the beam is raised to below its highest position and the link is caught upon the spring and the beam released from your hand that the beam descends more or less before its weight is supported by the spring, and at the same time the link will remain stationary upon the spring?

(Objected to as misleading and a misrepresentation of the fact).

A. The reason it goes back is because you raise it higher than the spring wants to raise it. If you raise it up higher than the spring is designed to hold it, of course it will drop back; the tension of the spring determines that point.

X Q. 93. Why is it that in order to cause the spring to support the beam that you must elevate the beam above the point at which it is supported by the spring?

A. That is not necessarily a fact, you don't have to do it.

X Q. 94. Can you lift the beam steadily to the highest point at which the spring is capable of supporting it, and no further, so that the spring will support it at that point?

A. I have done it.

X Q. 95. About how many times have you lifted this beam since your examination commenced?

A. I have not the least idea,—several times,—I don't know how many.

X Q. 96. Have you during any of those times referred to in your last answer, succeeded in having the spring support the beam at the highest point at which the spring is capable of, without lifting the beam beyond that point?

A. I can't say positively, I believe it did that when we first commenced this testimony, when we first brought it up here. Since that machine has been on exhibition here the tension of the spring has

been changed on various occasions, and has been strained beyond its ordinary capacity, and is not as strong now as it was at first.

X Q. 97. State about what time the link shown in the full sized machine before you was made.

A. This duplicate link was made about September 15, 1880.

X Q. 98. How do you fix that date?

A. That is the first opportunity I had to make it after returning from the Des Moines fair. I fix the date by my diary expense book.

X Q. 99. State whether or not there is any oily or greasy substance upon the spring and link now before you; and if so when was it applied?

A. I don't think there is any on it now. When we first made the link we oiled it, but afterwards cleaned it off, and rubbed it off with dirt.

X Q. 100. Did this removal take place before your direct examination commenced?

A. To the best of my recollection it did. I think we oiled it the first morning we brought it down here, and took it off again at the same time. It was all done at the shop before we brought it down here.

Re-Direct Examination.

R-d. Q. 74. Have you offered to exhibit the books to which you have referred to fix dates, to counsel for examination?

A. Yes.

R-d. Q. 75. Referring to cross-interrogatory 96, would not the result therein named be secured with certainty by giving the spring additional tension?

(Objected to as leading).

A. I think so, and certainly, if I should change the position of the spring slightly.

E. A. WRIGHT.

A. K. RAFF.

A. K. RAFF, being duly sworn, does depose and say, in answer to interrogatories proposed to him by P. T. Dodge, counsel for Wright, as follows, to-wit:

Q. 1. What is your name, age, residence and occupation.

A. A. K. Raff; dealer in farm machinery; 39 years; Muscatine, Iowa.

Q. 2. Are you acquainted with E. A. Wright, one of the parties to this interference; and if so, how long have you known him?

A. I am; have known him some eleven or twelve years.

Q. 3. Have you any knowledge of a cultivator, wherein a spring applied to lift or assist in lifting the beam was arranged to act with increasing force or effect as the beam is elevated. And if so, state when and where you first came to a knowledge of the same.

A. I have a knowledge of a cultivator of that description, and first saw it at the shops of the Eagle Manufacturing Company, in Davenport, Iowa, on or about April 1, 1878.

Q. 4. State briefly the facts in regard to the same?

A. My attention was called to the cultivator while in Davenport on a visit, by Mr. E. A. Wright, as one he was having considerable competition with in his sales through Ohio. It was in the rear part of their warehouse, with one of the beams set and adjusted as it originally came from the manufactory in Zanesville, Ohio; the other beam or coupling had been changed by Mr. Wright, with a device he put on or applied, for giving the beam more power or strength in raising up and the same when lowered or depressed.

Q. 5. At what time did the Wright spring exert the greatest effect to lift the beam, when the beam was up or when it was down; that is to say, was the beam when down in operative position subjected to the same amount of lifting strain as when raised to a higher point, or was there a difference?

A. There was a difference. The difference was that after getting the beam raised, with the shovels out of the ground, the loop that attached the coupling to the spring would help to raise the beam up, or elevate it.

Q. 6. Did Mr. Wright explain to you the object of his arrangement? If yea, what did he say?

A. He did. As near as I can recollect, his purpose was to overcome the difficulty of raising the beams of the plow by force of arms, and have that work done by the spring; and also to keep the shovels when in the ground to uniform depth.

Q. 7. Did he state the difference in action between his arrangement and that of Brown? If so, what did he say?

A. He did. The action on the operator of the plow was less laborious or severe with his device than the former.

Q. 8. Describe briefly how the Wright device was constructed or arranged.

A. The coupling consisted of a cast iron sleeve with a hook or arm attached, and to this hook was attached the spring of the cultivator; the spring was fastened to the pole of the plow; that spring was of cast steel, tapered as usual. A wrought loop or hinge was attached to the lower end of the spring, and this loop was hooked to the cast arm. This arm was inverted.

Q. 9. Did you see that machine as regards the Wright device operated in the warehouse? If so, state whether its operation was satisfactory and successful or not.

A. I did, and to my mind it was successful, as I thought it covered the improvement he was endeavoring to make.

Q. 10. Examine the machine before you and Exhibit Photographs representing the same, and state whether or not the spring and its connections as shown upon the side marked "A" are similar to or different from those you saw upon the machine in 1878.

A. They are similar to those I saw upon the machine at that time.

Q. 11. Can you state positively that their arrangement and mode of action are substantially the same as those shown you by Wright in 1878?

A. The arrangement and mode of action are the same. The wrought loop connecting arm with spring may be slightly different, but no marked difference.

Q. 12. Did you operate the Wright device the time you first saw it?

A. Can't say positively, yet think I did.

Q. 13. Did you understand at that time whether the beam was lifted more strongly when the shovels were out of the ground than when they were in the ground, or not?

A. If my memony is right, it lifted more strongly when the shovels were out of the ground.

Q. 14. In what way do you fix the date when you saw the machine with the Wright improvement upon it?

A. By a copy of a letter in my letter book in Muscatine, Iowa. I do the letter writing and corresponding for the firm of Raff & Borger. I find, on referring to my letter book, a letter written by me March 29, 1878, one written by Mr. Borger bearing date April

1, 1878, another written by me dated April 3, 1878; his letter being copied, satisfies me that I was absent from home at that time; and, as Davenport was the only point I visited that year, am convinced that I was here at that time.

Q. 15. Did you consider that the Wright device, as first seen by you, was capable of practical operation in the field?

A. To the best of my knowledge, I did.

Q. 16. Have you any interest whatever in the matter involved in this Interference?

A. None, whatever.

Q. 17. Do you sell the machines of Buford & Co. as well as those of other makers?

A. I do.

Adjourned to Wednesday, October 13, 1880, at 9 o'clock A. M.

Pursuant to adjournment, the same parties being present, A. K. Raff, in continuation of his examination, deposes as follows:

Q. 18. State whether you now have any additional means of fixing the time when you saw the original Wright machine in 1878?

(Counsel for Browne objects to further direct examination until he shall have had an opportunity to cross-examine the witness, for the reason that the witness had been turned over to him to cross-examine previous to the adjournment last evening, as is shown by the record, wherein the heading for cross-examination was written by the officer, which heading was not erased until this morning. When counsel for Wright stated that he was going to continue the examination, counsel for Browne was not aware, until that moment, that the direct examination was going to be continued.)

(At request of counsel for Wright, I, Peter A. Boyle, the Notary Public, do state that, at the time of the adjournment last evening, counsel for Wright stated, among other things, while talking about adjourning the examination to this morning, that if counsel for Brown could not finish his cross-examination within one hour, that it would be better to adjourn till morning, and that he would then want to ask the witness some more questions. I further state that counsel for Wright had stated that he was through with witness, and I had written the heading for the cross-examination, but no cross-question had been asked when it was concluded to abjourn. It was about ten minutes past six o'clock P. M.,

when I wrote the heading. The witness desired to get away on the train that left at 7:10 P. M., but it was concluded that counsel for Browne could not get through by that time. The witness concluded to remain over in Davenport to complete his testimony, and then it was agreed by counsel for Wright and counsel for Browne that it would be better to adjourn till morning. It was at the time it was agreed to adjourn till morning that counsel for Wright stated that he would ask some more questions in examination of the witness in the morning.)

A. I have, by a diary in the hands of Miss Mary Raff, making mention of myself and family being at the house of her mother on a visit, March 30, 31 and April 1, 1878, in Davenport.

Cross-Examined.

X Q. 1. Are all letters written by you and your partner press copied?

A. They are, when letters refer to the business of the firm.

X Q. 2. Does the press copy of Mr. Borger's letter referred to refer to business of the firm?

A. It does.

X Q. 3. Does your press copy book show that business letters were written every week day during the year 1878?

A. I can't say that it does; but every letter of importance written during that year appears in our letter book.

X Q. 4. Did you keep more than one letter press copy book during the year 1878?

A. Kept but one at a time; as one would fill up would replace it with a new one.

X Q. 5. Have you press copies other than the one mentioned of a letter written by Mr. Borger, during the year 1878?

A. Think there may be several copies of letters written by him during that year, though I am not certain.

X Q. 6. If any exist, are they kept elsewhere than in one of the series of books referred to?

A. If they exist they will be found in one of those books.

X Q. 7. What reason, if any, have you for believing that Mr. Borger wrote one or more letters which would appear in your press copy books?

A. I was away from home at the time said letter was written, and his letter appears in said book.

X Q. 8. What reason, if any, have you for believing that Mr. Borger wrote one or more letters other than the one just referred to, which would appear in your press copy book of 1878?

A. I think I was in Davenport on or about December 25, 1878, and if any letters were written by him, it was at this time.

X Q. 9. In answer to direct interrogatory 14, you state, in substance, that the letter written by Mr. Borger was dated April 1, 1878, and that you were in Davenport at that time; how long did you remain in Davenport after that date?

A. I returned home the evening of April 2, or else the morning of April 3; am not positive which day.

X Q. 10. When did you next leave home during the year 1878?

A. Have no distinct recollection, yet believe it was not till the following winter, along in December.

X Q. 11. State where you went that time?

A. Davenport, Iowa.

X Q. 12. During the year 1878 were you, at any time, absent from your place of business, except on the two occasions just mentioned?

A. Don't think I was; at least not to have been away over night.

X Q. 13. Were there one or more days during that year when you were not in your office or place of business?

A. There were while I was in Davenport, but no other time.

X Q. 14. Where was it that you did your daily business correspondence in 1878?

A. In our office in Muscatine, Iowa.

X Q. 15. Did Mr. Borger ever write any business letters, such as you have referred to as press copied, during the year 1878, except those which he wrote while you were absent in Davenport on the two occasions mentioned?

A. He did not.

X Q. 16. How do you know that he did not?

A. For the reason of his being a German, and not acquainted with the English language as well as I am; and, furthermore, it was an understanding between us on going into business together, that keeping the books and attending to the correspondence should be my exclusive work, and that there are no copies of letters appearing in our letter book in his handwriting.

X Q. 17. Describe fully the exact machine shown you by Mr. Wright on or about April 1, 1878; that is to say, so much of it as has any bearing upon Mr. Wright's invention.

A. It was a cultivator manufactured in Zanesville, Ohio, and known as the Brown. The right hand coupling consisted of a cast iron sleeve with a cast hook attached; a curved arm encircled this sleeve on the forward side, to which was attached a knuckle, and to which was bolted the shanks or beams; a steel spring of an inch and a-half in width, one-eighth in thickness, tapering naturally toward the lower end, fastened to the upper part of arch. The upper part of the spring was curved in the shape of an elbow, or "C;" a wrought loop was fastened to the lower end of the spring, and worked in the cast arm or loop attached to sleeve; the left coupling consisted, also, of a cast iron sleeve, with cast iron arm, the same as the other coupling, and turned on axle, so that the cast arm was inverted; it had also a spring attached to arch of cultivator, the same as before described, and spring was connected with cast iron arm of coupling by wroght iron loop 8 or 10 inches in length and probably 3/8 round iron, thereby doing away with the small wrought loop on end of spring, as described in former coupling of cultivator.

X Q. 18. Were you looking at the machine now on exhibition at the time you gave the above answer?

A. Part of the time; not continuously.

X Q. 19. In the machine now before you, and the Exhibit Photographs you hold in your hand, is the coupling of Wright upon the same side of the machine as when you first saw it?

A. It is.

X Q. 20. State how you designate the left from the right hand coupling; or, in other words, which is the left hand of the machine.

A. In standing behind the cultivator, or in holding the handles of same, the coupling on the left hand is the left hand coupling, and the one on the right is the right hand coupling. I mean when facing the cultivator.

X Q. 21. At the time you first saw this cultivator, did you take any measurement or measurements of any or all of its parts?

A. I did not.

X Q. 22. Did you take particular notice of the kind of metal used in the coupling, the arm, and of the loop connecting the arm with the spring? I am referring to the time you first saw it.

A. I did.

X Q. 23. Are you positive that they were of the kind of metal you have referred to in answer to X Q. 17?

A. I am.

X Q. 24. What was it that called your attention so particularly to the kind of metal they were made of?

A. My acquaintance with farming tools, and of my having considerable experience in sales of cultivators as well as their construction.

X Q. 25. Describe, fully, the operation of the machine which Mr. Wright showed you on or about April 1, 1878.

A. The left hand beam, with the device or long loop connecting spring with cast arm, had a tendency to keep the shovels more rigidly and firmly in the ground; and also in raising the beam above a certain point or curve, the spring assisted the operator. The right hand beam, with the Brown spring attached, lifted with more ease, and the shovels were more liable to work themselves out of the ground.

X Q. 26. Did you take hold of the cultivator at that time? And if so, state what you did.

A. I took the handles, raised them up, let them down, and moved them sideways.

X Q. 27. What handles do you refer to?

A. Handles attached to beams on Brown cultivator.

X Q. 28. Did you lift both beams at the same time?

A. I do not now recollect; possible, I did.

X Q. 29. In answer to X Q. 20, you state that "the left hand beam, with a device or long loop connecting spring with cast arm, had a tendency to keep the shovels more rigidly and firmly in the ground;" for what reason did the beam have this tendency?

A. It overcame an objection in the Brown beam of the cultivator of the shovels working or coming out of the ground while the cultivator was in operation.

X Q. 30. Did this result from the action of the spring or the weight of the beam—that is to say, in the Wright device?

A. From the action of the spring.

X Q. 31. Had the weight of the beam anything to do with keeping the shovels in the ground?

A. Not that I know of, as the beams are supposed to be all of about the same weight and size. It is like this: The beam of any plow has something to do with keeping the shovels in the ground, but no more to do with this particular beam than the other on the Brown side of the cultivator.

X Q. 32. In the same answer you state in substance that above a certain point or curve the spring assisted the operator in raising the beam. At what point do you refer to?

A. Can't, probably, state the given point; possibly after the shovels were out of the ground, or by raising the beam three or four inches.

X Q. 33. State how it was that the spring would hold the shovels in the ground, and would also elevate the beam when raised above the point stated in your last answer.

A. It was done by the sliding of the wrought iron loop up and down on the spring.

X Q. 34. Did the spring act with any perceptible force upon the beam when the shovels were in the ground?

A. Some; but not as much as when the beam was out of the ground or elevated.

X Q. 35. Was the movement of the loop or link when raising the beam a sliding or an intermittent jumping movement?

A. Think it was intended for a sliding movement, though that may not have been altogether practicable from the roughness, spring and loop.

X Q. 36. Did you at any time, or have you at any time since, seen this particular machine, or one like it, when by gradually lifting the beam the loop would continously slide up the spring as the beam was being lifted to its highest position?

A. I have, though can't say that I tried it or handled it myself.

X Q. 37. How was the machine constructed which you saw operate in this manner?

A. It is described in an answer given to above, and shown in the photograph.

X Q. 38. Was the spring and link in that machine in which you saw the link act continuously exactly like the one before you and shown in the Exhibit Photographs?

A. The spring was the same, though in the link there may be some slight change, though the purpose and intention were the same.

X Q. 39. Until you appeared here as a witness have you ever seen the machine in question since April 1, 1878?

A. Not to my recollection. However I appeared in answer to a summons October 6, 1880, and saw it at that time.

X Q. 40. Did you see it more than once on or about April 1, 1878? And if so, state when and how many times.

A. I did not.

X Q. 41. State about how much time you consumed in looking at the machine the first time you saw it?

A. An hour, as near as I can recollect.

Re-Direct Examination.

Q. 19. In your direct examination you stated in substance that you did not remember whether you operated the machine in 1878 or not. In answer to X Q. 26 you say in substance that you took hold of the handles and moved them. How do [you] account for these two answers?

A. Since first being questioned on that point I have freshened my memory, and at the solicitation of Mr. Wright I handled and operated the beams. I handled the beams at the time I first saw the plow.

Q. 20. Are you positive that it was at the time of your first visit to Davenport in 1878 that you saw Mr. Wright's machine?

A. I am.

Q. 21. In your answer to X Q 16 you say in substance that no copies of letters appear in your letter book in your partner's, Mr. Borger's, hand writing. How do you reconcile this with your previous statement that there was one letter in said book written by him?

A. I should have said others than those he may have written in cases of emergency while I was absent in Davenport.

Q. 22. Regarding the sizes of the parts in Wright's original machine, are they not, with the exception of the link, of the ordinary sizes and forms (though differently arranged) as made and sold by the Zanesville Company?

A. I believe they are.

X Q. 42. Since you have made answer to direct Q. 12 have you had any conversation, either directly or indirectly, with any person in regard to what took place at the time you first saw the machine on April 1, 1878?

A. No.

A. K. Raff.

EDWARD P. LYNCH.

EDWARD P. LYNCH, being duly sworn, does depose and say, in answer to interrogatories proposed to him by P. T. Dodge, counsel for Wright, as follows, to-wit:

Q. 1. What is your name, age, residence and occupation?

A. Edward P. Lynch; 40 years; Davenport, Iowa; superintendent of the Eagle Manufacturing Company's works.

Q. 2. Are you acquainted with E. A. Wright, one of the parties to this interference; and, if so, how long have [you] known him?

A. I have known Mr. Wright for about nine (9) years.

Q. 3. What class of articles does the Eagle Manufacturing Company make?

A. Farming implements, consisting of corn cultivators, hay rakes, plows, etc.

Q. 4. Have you any knowledge of an invention in cultivators claimed to have been made by Mr. Wright, the same embracing a lifting spring which acts with increasing effect or force as the beam rises above an operative position? If so, state, briefly, what you know regarding the same.

A. I have a knowledge of it. In the spring of 1878 Mr. Wright, at our shops, put a spring, or arranged a spring, on a cultivator that operated in that manner.

Q. 5. State when you first became aware that Mr. Wright had made the invention named.

A. I first became aware of Mr. Wright's idea as early as the winter of 1876 and 1877. Mr. Wright, at that time, was traveling for us, and on his return from one of his trips, informed me that Mr. Brown, of Zanesville, Ohio, had invented what he called a new spring, which he described to me, stating that it had the same fault as a spring invented by Mr. Brown at an earlier day, and used on a cultivator known as the "Malta," which spring lifted up with an increared force as the tension on the spring increased, or as the beam was lowered to an operative position; he conveyed this idea to me, that the spring should be arranged so as to lift less when the beams were in operative position, or have no effect at all.

Q. 6. Did you, at that time, understand clearly any method proposed by him for carrying his invention into use?

A. I do not remember that he went into any particular detailed method at the time while describing this new Brown cultivator.

Mr. Wright had frequently talked to me about springs after that time and before it, and talking over various methods, the details of which I can't give, until the approach of the following spring of 1878, when we together made numerous sketches of springs that embodied the idea that Mr. Wright considered correct, which was to arrange the spring so that its lifting effect would be decreased when the beams were in operative position.

Q. 7. Referring to the exhibit photographs and the machine represented thereby, state whether or not the spring and connections on the left side of the machine are like or unlike those in the Wright machine of 1878.

A. They are like the machine made in 1878.

Q. 8 Are you positive that the arrangement and mode of operation of the spring connection above referred to is the same as that in the 1878 machine?

A. I am.

Q. 9. Did you see and operate the Wright device of 1878 at that time?

A. I did.

Q. 10. State, as a skilled mechanic, whether it operated in a successful and practical manner.

A. It did.

Q. 11. Did the Wright spring, at the time you saw it on the machine in 1878, act with increasing lifting force as the beam was elevated.

A. It did.

Q. 12. Do you believe that the machine with the Wright device thereon would have operated practically in the field?

A. It would, I knew it would.

Q. 13. State whether or not the Eagle Manufacturing Company is engaged in the manufacture and sale of machines having lifting springs which act with an increased force or effect as the beams are elevated?

A. They are.

Q. 14. When did such manufacture and sale commence?

A. The manufacture and sale commenced in the spring of 1879.

Q. 15. Do you know whether Mr. Wright at any time after making his invention, expressed any intention of abandoning the same?

A. I think he did not; on the contrary he kept on working at various devices to construct a spring that would embody this idea of a decreased lifting force when the beams were in an operative position, so as to get it in a form that it would not infringe the Brown patent.

Q. 16. What effect, if any, did Mr. Wright make to induce the Eagle Manufacturing Company, to manufacture his arrangement represented in the exhibit photographs.

A. When Mr. Wright arranged the spring first upon the machine he called me in to see it operate. After seeing it, and finding that it embodied the idea that he originated, I told him that it was all right, but that it infringed the Brown patent. He, not satisfied with that, went on and described a construction that he thought it would be well to use, and further made a complete drawing of his plan of construction, and urged, during all the time, the necessity of us having a spring upon our cultivator. At that time I felt that he was rather persistent in the matter; told him that we did not want to infringe that Brown patent.

Q. 17. Do you remember clearly the drawing above referred to?

A. I do.

Q. 18. Examine the drawing, "Exhibit 6," now presented to you, and state if you know what it is?

A. I believe this to be the drawing that Mr. Wright made at that time, showing his plan of construction.

Q. 19. Are you positive that the arrangement represented in the drawing is the same as that in the original drawing referred to?

A. I know that it is.

Q. 20. Do you find anything about that drawing or the paper upon which it is made, which would indicate to your mind that it was made in the Eagle shops in 1878, other than your general recollection of it?

A. The paper used is the same kind that I used during that year in making a number of drawings.

Q. 21. Has similar paper been used in the Eagle shops during the past year?

A. I could not say; the paper we have at present is a heavier paper.

Adjourned till Thursday morning, October 14, 1880, at 9 o'clock A. M.

Pursuant to adjournment, the same parties being present, Edward P. Lynch, in continuation of his examination, deposes as follows:

Q. 22. State whether you have seen the machine, represented in exhibit photographs, operated in the field with the Wright spring thereon as represented; if so, state when and where and with what result?

A. I have. I saw it in operation this morning, near the railroad track in, I believe, the Wetmore addition to the city of Davenport. The spring operated in the manner claimed by Mr. Wright, which is, exerting no undue influence on the beams when operating, and assisting in raising the beams with an increased force when the beams are elevated.

Cross-Examined.

X Q. 1. How long have you been superintendent of the Eagle Manufacturing Company's works?

A. I have had entire charge of the works for about six (6) years, and previous to that time was superintendent in connection with a Mr. Henry Raff from the time the works were first organized.

X Q. 2. Are you of the company; and, if so, how long have you been such?

A. I am, and have been since the organization, I think in 1872.

X Q. 3. Had the Eagle Manufacturing Company manufactured double-shovel straddle-row cultivators of the class to which belongs the cultivator shown in exhibit photographs previous to the machine shown in the application upon which this Interference was declared?

A. They have manufactured straddle-row cultivators since their organization, continuing the business of the previous organization, known as Raff, Cook & Co., they having manufactured straddle-row cultivators since 1867.

X Q. 4. Under what patent were these cultivators manufactured?

A. They were manufactured under patents granted to Mr. Raff and myself, as well as using some devices we obtained from other parties.

X Q. 5. Has W. P. Brown, of Zanesville, ever threatened the Eagle Company with a suit for infringement upon any other spring cultivator patent which he held, other than the one marked "Exhibit A" and, if so, state what that patent was, and when the threat was made?

A. I believe he did not threaten us with a suit upon any other patent than this indicated in "Exhibit A."

X Q. 6. Did he directly or indirectly request the Eagle Company to make a settlement with him for a supposed infringement upon any other spring patent he held other than "Exhibit A?"

A. No; not that I know of.

X Q. 7. Has the Eagle Manufacturing Company any interest in the Allison spring cultivator which was reissued within the present year?

(Objected to as irrelevant and impertinent, as seeking information as to the private affairs of the Eagle Company in no wise affecting the case; and the witness is instructed that he need not answer the question unless he feels inclined so to do.)

A. The Eagle Manufacturing Company has an interest in the Allison patent.

X Q. 8. How long have they held such interest?

(Same objection as last.)

A. I don't remember exactly, but within the year some time, I think.

X Q. 9. Previous to acquiring the interest in the Allison patent had the Eagle Manufacturing Company made or sold any cultivators which, in your judgment, were subject to the Allison patent?

(Counsel for Wright instructs witness not to answer the question.)

(Question objected to as being impertinent and irrelevant, entirely foreign to anything appearing in any manner in the case, and intended to affect other causes. Also, because the witness has not been called or questioned as an expert upon legal questions.)

(Counsel for Browne denies that it is his intention to affect other causes, directly or indirectly, or that he is interested in other causes which the Eagle Manufacturing Company may have, and insists that the witness shall answer the question.)

(Witness declines to answer the question.)

X Q. 10. At what time in the spring of 1879 did the Eagle Company commence manufacturing machines in which the spring acts with increasing force upon the beam as it is raised? That is, state the month and the day of the month?

A. I think we made them early in May. I could not state the exact day when they were first made without referring to the books, and then could only find out the day they were shipped.

X Q. 11. Was it later than the fifteenth day of May, 1879?

A. My impressions are that it was about the tenth day of May.

X Q 12. How did you know at the time Mr. Wright showed the machine set forth in your answer to direct interrogatory 16 that his device was an infringement of the Brown patent?

A. About that time I requested Mr. Wright to examine the Patent Office reports and find out what Brown claimed. Reading over the claims I saw that he claimed a pipe box with a projecting arm in combination with a spring. As the device Mr. Wright had arranged contained those same features I felt that it was an infringement, and so told him.

X Q. 13. Did you at that time make any effort to discover whether or not the claim referred to was valid? And if so, state what effort you made to that end?

A. I made no effort at all; I did not question the validity of it.

X Q. 14. Do you believe yourself to be an expert in construing the scope of claims in patents?

(Objected to as incompetent, and counsel is notified that if he wishes the services of a patent expert he must himself employ him and pay him for his services.)

A. I think I have a fair knowledge of matters of that kind.

X Q. 15. During the year 1878 did you use any other different or kind of paper to make drawings upon from that shown in "Exhibit 6?"

A. We had at the same time in the office some very heavy paper, which I used occasionally.

X Q. 16. Have you any reason to believe that the same kind of paper might have been obtained in this vicinity since the year 1878?

A. I have reason to believe that it could. I suppose that it is kept in stock by dealers.

X Q. 17. Previous to this morning, have you ever seen the machine referred to in direct interrogatory 22 operated in the ground?

A. I never did.

X Q. 18. When this machine was operated by you this morning, was it supplied with shovels?

A. It was.

X Q. 19. Have they since been removed?

A. They have.

EDWARD P. LYNCH.

GEORGE H. FRENCH.

GEORGE H. FRENCH, being duly sworn, does depose and say, in answer to interrogatories proposed to him by P. T. Dodge, counsel for Wright, as follows, to-wit:

Q. 1. What is your name, age, residence and occupation?

A. George H. French; Davenport, Iowa; secretary of the Eagle Manufacturing Co.

Q 2. Are you acquainted with E. A. Wright, one of the parties to this interference; and if so, how long have you known him?

A. I know E. A. Wright, and have known him for the last five (5) or six (6) years.

Q. 3. Have you any knowledge of a cultivator constructed or improved by Mr. Wright having a spring which tended to raise the beam, and which acted with an increasing lifting force or effect as the beam was elevated?

A. I have.

Q. 4. State what you know regarding the same, briefly.

A. In the spring of 1878 we procured a Brown cultivator from Indianapolis, and Mr. Wright attached a spring having the effect to raise the beam and suspend it, which spring acts with increasing force as the beam was raised.

Q. 5. Examine the photographs presented to you, and the machine which they represent, and state whether the spring upon the side marked "A," is arranged and connected in the same or a different manner from that on the machine of 1878.

A. I think this is the same arrangement as was on that machine.

Q. 6. Have you seen the machine before you operate in the field; and, if so, with what result or success, so far as the Wright device [is] concerned?

A. I saw this machine this morning at work in the field, and the spring had the same effect as described above.

Cross-Examined.

X Q. 1. Have you any interest, present or prospective, in the device in controversy?

A. I have an interest as a stockholder in the Eagle Manufacturing Company; none other.

X Q. 2. Referring to direct interrogatory 5, are you positive that the machine before you is the same in construction, so far as its connection with the Wright device is concerned, as the one you saw in 1878?

A. I believe it is; I swear I believe it is; I swear that I think it is.

X Q. 3. Previous to this morning, had you ever seen the machine operated in the field?

A. No.

X Q. 4. At the time you first saw the machine before you with Mr. Wright's device or link attached, what conversation, if any, did you have with him in regard to it?

A. I can't recall a conversation I had with him.

X Q. 5. Did you at that time, take hold of and operate the beam having Mr. Wright's attachment connected with it?

A. I think I did.

X Q. 6. Do you know that you did?

A. I can swear that I believe I did.

X Q. 7. Upon which side of the cultivator was his attachment at that time?

A. I am not certain, but think upon the left beam; that is my impression.

X Q. 8. Without taking hold of the beam with Mr. Wrights attachment, at the time you first saw it, how could you have determined the action of the spring upon the beam, as stated in answer to direct interrogatory 3?

A. I could see that by the link sliding up on the spring that the leverage was increased so as to enable the spring to act with increasing force.

X Q. 9. What part of the device had its leverage increased?

A. The spring.

GEO. H. FRENCH.

GEORGE W. FRENCH.

GEORGE W. FRENCH, being duly sworn, does depose and say, in answer to interrogatories proposed to him by P. T. Dodge, counsel for Wright, as follows, to-wit:

Q. 1. What is your name, age, residence, and occupation?

A. George W. French; Davenport, Iowa; 21 years; clerk in Eagle Manufacturing Co.

Q. 2. Do you know E. A. Wright, one of the parties to this interference; and, if so, how long have known him?

A. I have known him for about three years and one-half.

Q. 3. Have you any knowledge of an invention claimed to have been made by Mr. Wright, consisting in a lifting spring for a cultivator arranged to act with increasing force or effect as the beam rises? State what, if anything, you know, in relation to the same.

A. In the spring of 1878, Mr. Wright used a device on a Brown cultivator, which, when the beams were in the ground, had no active effect; when partially raised, acted with increasing power or effect.

Q. 4. Examine the Exhibit Photographs, and state whether the arrangements represented on the left side of the machine therein shown is like or unlike the arrangement which you saw in 1878.

A. It is substantially the same.

Q. 5. Did you operate the Wright device at the time you first saw it?

A. Yes.

Q. 6. Did it operate well or otherwise?

A. Well.

Cross-Examined.

X Q. 1. Do you know that Mr. Wright made the machine in the Exhibit Photographs shown which you saw in 1878, so far as it relates to the increasing effect mentioned in answer to direct interrogatory 3?

A. Mr. Wright made the link which, with the aid of the spring already on the cultivator, gave the increasing power or effect.

X Q. 2. Did you see him make the link? And if so, state how he made it.

A. No; he had it made by his orders in the smith shop, and brought it to the cultivator immediately after having it made.

X Q. 3. How do you know that the link was made by his orders?

A. He said so, and I saw him go into the smith shop to have a link made, and return with it.

X Q. 4. Before going into the shop, did Mr. Wright tell you that he was going to have that particular link made?

A. He said he was going to have a link made to lock the beam in the ground when operating, and to hold it up when partially raised by the aid of the spring.

X Q. 5. What relation, if any, are you to George H. French, secretary of the Eagle Manufacturing Co.?

A. His son.

GEORGE W. FRENCH.

THOMAS O. SWINEY.

THOMAS O. SWINEY being duly sworn, does depose and say, in answer to interrogatories proposed to him by P. F. Dodge, counsel for Wright, as follows, to-wit:

Q. 1. What is your name, age, residence, and occupation?
A. Thomas O. Swiney; 28 years; Davenport, Iowa; treasurer of the Eagle Manufacturing Co.
Q. 2. Were you treasurer of the Eagle Manufacturing Co. in the year 1878?
A. I was.
Q. 3. Examine the paper now presented to you, and state, if you know, what it is.
A. Freight bill on a Brown cultivator, from Columbus, Ohio.
Q. 4. State whether that machine was received by the Eagle Company at the time indicated by the bill.
A. Two days later than the date of the bill it was received.
(Freight bill introduced in evidence, and marked "Wright's Exhibit 9.")

Cross-Examined.

X Q. 1. How do you fix the date of the receipt of the Brown cultivator, as stated in answer to direct interrogatory 4?
A. From entry in the cash book.
X Q. 2. State what that entry is.
A. Freight on one Brown cultivator, $1.20.

THOS. O. SWINEY.

(Counsel for Brown gives notice that at the hearing of this cause before the Examiner of Interferences he will demand the original working machine referred to and on exhibition during this examination, and will move that the Examiner require it.)
(Counsel for Wright replies that, as appears by the testimony in this case, it is impossible for them to purchase or obtain the machine in question, but offers to produce, if desired, the duplicate link in said machine, said link being the only part of the machine belonging to Wright.)

STATE OF IOWA, } ss.
SCOTT COUNTY. }

At Davenport, in said county, personally appeared before me the above named E. A. Wright, A. K. Raff, Edward P. Lynch, George H French, George W. French and Thomas O. Swiney, and before the commencement of their testimony were duly sworn to tell the truth, the whole truth, and nothing but the truth in answer to the interrogatories contained in the foregoing depositions by them subscribed, which were written out by me, Peter A. Boyle, a notary public in and for said county and state, and at the conclusion thereof made oath that the deposition by them subscribed contained the truth, the whole truth, and nothing but the truth. Said depositions were taken at the request of E. A. Wright, to be used upon the hearing of an interference between the claims of said E. A. Wright and those of George Shaver and William J. Brown, before the Commissioner of Patents, on the 21st day of November, A. D. 1880. William J. Browne appears by his counsel, J. C. Elliott, Esq., no appearance on behalf of Shaver, both having been duly notified, as appears by the original notice hereto attached. The taking of said depositions commenced on Saturday, October 9, 1880, at 2 o'clock, P. M., at the office of Thompson & French, in Davenport, Iowa, and continued during the 11th, 12th, 13th and 14th days of October, 1880. I further certify that I am not connected by blood or marriage with either of the parties, nor interested directly or indirectly in the matter in controversy.

[SEAL.]

PETER A. BOYLE,
Notary Public,
Scott County, Iowa.

NORTHERN DISTRICT OF ILLINOIS, NORTHERN DIVISION. } ss.

I, William H. Bradley, Clerk of the Circuit court of the United States, for said Northern district of Illinois, do hereby certify the accompanying and foregoing embracing volumes 1 and 2 to be a true and correct transcript of the record of all the proceedings had in said court (made in accordance with the stipulation filed November twenty-fifth, 1891,) in the cause wherein The Eagle Manufacturing Company is complainant, and the David Bradley Manufacturing Company is defendant, as the same appears from the records of said court now remaining in my custody and control.

In testimony whereof I have hereunto set my hand and affixed the seal of said court at my office in Chicago, in said district, this first day of December, 1891.

[SEAL] WM. H. BRADLEY,
Clerk.

UNITED STATES CIRCUIT COURT OF APPEALS, FOR THE SEVENTH CIRCUIT.

October Term, 1891. No. 22.

David Bradley Manufacturing Company
v.
Eagle Manufacturing Company.

The clerk will enter my appearance as counsel for the appellee.

GEORGE H. CHRISTY,
Corner Grant and Diamond streets,
Pittsburg, Pa.

[Endorsed]: Filed December 31, 1891.

OLIVER T. MORTON, *Clerk.*

STIPULATION.

UNITED STATES CIRCUIT COURT OF APPEALS, SEVENTH CIRCUIT.

The David Bradley Manufacturing Company, *Appellant,*
v.
The Eagle Manufacturing Company, *Appellee.*

The Moline Plow Company, *Appellant,*
v.
The Eagle Manufacturing Company, *Appellee.*

Appeal from Circuit Court of the United States, for the Northern District of Illinois.

Appellants respectfully represent that a large number of patent office specifications and drawings are exhibited in said causes; that the reprinting of said exhibits will be attended with great expense, and that the reduction of the drawings to the size of an ordinary octavo page practically destroys their usefulness; they therefore request that this Honorable court permit the filing of copies of said exhibits as printed by the patent office, and that ten bound copies be accepted by the court as a compliance with the rule regarding the printing of records and exhibits in this Honorable court.

DAVID BRADLEY MFG. CO.,
THE MOLINE PLOW CO.

By BOND ADAMS & PICKARD,
Their Solicitors.

So ordered.

W. Q. GRESHAM.

[Endorsed]: Filed December 23, 1891.

NORTHERN DISTRICT OF ILLINOIS, NORTHERN DIVISION. } ss.

I, William H. Bradley, Clerk of the Circuit court of the United States, for said Northern district of Illinois, do hereby certify the accompanying and foregoing embracing volumes 1 and 2 to be a true and correct transcript of the record of all the proceedings had in said court (made in accordance with the stipulation filed November twenty-fifth, 1891,) in the cause wherein The Eagle Manufacturing Company is complainant, and the David Bradley Manufacturing Company is defendant, as the same appears from the records of said court now remaining in my custody and control.

In testimony whereof I have hereunto set my hand and affixed the seal of said court at my office in Chicago, in said district, this first day of December, 1891.

[SEAL] WM. H. BRADLEY,
Clerk.

UNITED STATES CIRCUIT COURT OF APPEALS, FOR THE SEVENTH CIRCUIT.

October Term, 1891. No. 22.

David Bradley Manufacturing Company
v.
Eagle Manufacturing Company.

The clerk will enter my appearance as counsel for the appellee.

GEORGE H. CHRISTY,
Corner Grant and Diamond streets,
Pittsburg, Pa.

[Endorsed]: Filed December 31, 1891.

OLIVER T. MORTON, *Clerk.*

"been taken, the said cause was heard on final hearing at the May term "of said court at Des Moines, A. D. 1888. And the said court having "considered the proofs and the arguments of counsel did adjudge and "decree that the said David Bradley & Co. had infringed the said letters "patent, and did enjoin the aforesaid David Bradley & Co. from further "infringement thereof, which said decree remains in full force and unre- "versed; all of which proceedings and things will more fully appear by "a certified copy of the records of said court, which your orator is ready "at any time to produce in court as may be directed, and your orator "attaches hereto a certified copy of said decree marked 'Exhibit C.'

"And your orator further shows that the cultivators sold by the said "David Bradley & Co. were made by the defendant herein under letters "patent of the United States, No. 243,123, to C. A. Hague, dated June "21, 1881, and No. 270,629, to B. C. Bradley, January 16, 1883, which "said patents were issued to the Furst and Bradley Manufacturing Com- "pany as assignee of said Hague and Bradley, and passed to the defend- "ant herein, the successor of the said Furst & Bradley Manufacturing "Company. The said cultivators as made by the defendant are correctly "shown by the drawings in the said letters patent to said B. C. Bradley."

The decree referred to in the bill as "Exhibit C" is as follows:

"This cause came on to be finally heard upon the pleadings and "proofs and was argued by counsel for the respective parties, and the "pleadings and proofs having been duly considered, it is hereby, this "23d day of May, 1888, ordered, adjudged and decreed as follows, viz:

"The letters patent referred to in complainant's bill being letters "patent of the United States, granted unto Edgar A. Wright, for im- "provements in cultivators, No. 242,497, and dated June 7, 1881, is a "good and valid patent, and that the said Edgar A. Wright was the first "and original inventor of the improvements therein described and claimed, "and that the said complainant had at the commencement of this cause a "good and legal title to said letters patent No. 242,497, as averred in "complainant's bill, and that the said defendant has infringed the said "patent, and upon the exclusive rights of the complainant under the "same, as claimed in the first four claims of said patent.

"And it is further ordered, adjudged and decreed that the defendant "above named, its servants, agents, operatives and workmen, each and "every one of them, be, and they are, perpetually enjoined and restrained "from either directly or indirectly making, using or selling to others to "be used, cultivators constructed and operated in the manner and upon "the principle described in said letters patent of the United States No. "242,497.

"And it is further ordered, adjudged and decreed that the com- "plainant recover of the defendant the profits which it has received or "made or which have accrued to it by the use or sale of the improvements "described and secured by said letters patent at any and all times since

" June 7, 1881, and also the damages which the complainant has sus-
" tained thereby.

" And as it does not appear to the court what said profits and dam-
" ages are, it is further ordered, adjudged and decreed that this cause be
" referred to George F. Henry, Esq., a master of this court, to take and
" report to the court an account of the profits which the defendant has
" received, or which has arisen, or accrued to it from the use or sale of
" said improvements, and to ascertain and report the damages which the
" complainant has sustained thereby since June 7, 1881, from the papers
" and evidence in the cause, and from any evidence which either party
" may produce before him of the same; and, when he shall have taken
" an account of said profits and assessed said damages, he shall return the
" same to this court for further action in the premises. And it is further
" ordered, adjudged and decreed that the complainant on such accounting
" has the right to cause an examination of the officers, agents and em-
" ployes of the defendant *ore tenus* or otherwise, and also the production
" before said master at such time as said master may order of the books,
" vouchers, and documents of the defendant, and that the officers of said
" defendant attend before said master from time to time within this dis-
" trict as said master shall direct.

" And it is further ordered that the question of increase of damages,
" and all other questions, be reserved until the coming in of the master's
" report.

" And it is ordered that the parties and master may apply on the
" foot of this decree for such other and further order of instruction as
" may be necessary.

" And it is further ordered, adjudged and decreed that the complain-
" ant recover of the defendant the costs of this suit to be taxed."

The answer of the defendant (the present appellant) contains the following admissions respecting such charges:

" Fourth. This defendant, further answering, admits that a suit
" was commenced by the Eagle Manufacturing Company, the complain-
" ant herein, against David Bradley & Co., in the Circuit Court of the
" United States, for the Southern District of Iowa, substantially as in said
" bill alleged. They admit that said David Bradley & Co. was and is a
" separate corporation, and in part a branch house or agency of this
" defendant, and was engaged in selling, with other machinery, culti-
" vators manufactured by this defendant.

" They admit that said suit was to a certain extent defended by this
" defendant. They admit that pleadings were filed and proofs taken, as
" set forth in said bill.

" Fifth. This defendant, further answering, admits that said last
" named suit was heard at the time and place alleged in said bill, and
" that a decree was rendered adjudging that said David Bradley & Co.
" had infringed the said letters patent No. 243,497, and that the said

"David Bradley & Co. was enjoined from further infringement thereof, "but this defendant avers that in said cause the finding of the court was "against the defendant largely, if not wholly, by reason of the said court "not understanding the operation of the machine shown in one of the "patents set up as anticipation the supposed invention of complainant's "patent, to wit: The Dalton patent of 1869, and this defendant has rea- "son to believe, and does believe, that if the court had fully understood "the machine of said patent the finding and decree would have been "different.

"Sixth. This defendant, further answering, admits that the culti- "vators sold by the said David Bradley & Co. were made by this "defendant under, and in accordance with, letters patent of the United "States, No. 243,123, dated June 21, 1881, to C. A. Hague, and No. "270,629, dated January 16, 1883, to B. C. Bradley."

There was given in evidence in this suit the following admission by the defendant:

"In the suit pending in the Circuit Court of the United States, for "the Southern District of Iowa, wherein the Eagle Manufacturing Co. is "complainant, and David Bradley & Company defendant, and which "suit was brought to restrain the infringement of the letters patent in "suit herein, the defendant in this cause, the David Bradley Manufactur- "ing Company, employed counsel, took charge of and conducted the "defense of said suit in the name of the said Bradley & Company and "paid the expenses thereof. This was done by the defendant herein, the "same as it would be done by it for any agent, branch house, or cus- "tomer engaged in selling implements purchased of the defendants, if "sued for infringement of a patent on account of selling such goods."

It also appeared in evidence that in the suit in the Circuit Court of the United States, for the Southern District of Iowa, against David Bradley & Co., the master, to whom the cause was referred to ascertain and report the complainant's damages, on or before October 15th, 1889, reported to the court as follows:

"That the complainant has already brought suit against the manu- "facturer of the cultivators which were sold by the defendant, electing to "recover in full of said manufacturer all profits and damages arising "from the sales by the defendant herein, as well as other profits and "damages, and for that reason will offer no proof of profits and dam- "ages in the cause. Accordingly the master reports that the complain- "ant is entitled to recover the sum of one cent nominal damages and "costs."

This report was made pursuant to the following stipulation of the parties:

"It is hereby mutually agreed by and between the Eagle Manu-
"facturing Company and the David Bradley Manufacturing Company,
"on this 25th day of September, 1889, as follows, to wit:

"That said Eagle Manufacturing Co. may cause the master in the
"case of *Eagle Manufacturing Co.* v. *David Bradley & Company*, pend-
"ing at Des Moines, Iowa, in the United States Circuit Court for the
"Southern District of Iowa, to return to the court the annexed report;
"and the action of the court thereon shall not be claimed by said David
"Bradley Manufacturing Co. to be a bar to the recovery by the Eagle
"Manufacturing Company of the said David Bradley Manufacturing
"Company of all damages and profits, if any, arising from the sale of the
"cultivators by the said David Bradley & Co. in violation of the letters
"patent 242,497, to E. A. Wright, and by him assigned to the Eagle
"Manufacturing Co."

On the 23rd day of October, 1889, the following written stipulation was signed and filed in the cause:

"The following proofs were offered in evidence in said cause this
"23d day of October, 1889:

"The complainant appeared by Nathaniel French, its solicitor, and
"the defendant, though not appearing, consented in writing to the intro-
"duction of said proofs, in so far as the same are material; and thereupon
"the complainant offered in evidence the final decree of the Circuit Court
"of the United States for the Southern District of Iowa, in the case of
"*Eagle Mfg. Co.* v. *David Bradley & Co.*, which same is marked 'Com-
"plainant's Exhibit Bradley Final Decree'; and thereupon the com-
"plainant offered in evidence a stipulation entered into by defendant in
"regard to the testimony of E. A. Wright, A. K. Raff, G. W. French
"and E. P. Lynch, taken in the case of *Eagle Mfg. Co.* v. *Miller*, pend-
"ing in the Circuit Court of the United States for the Southern District
"of Iowa, together with a copy of said depositions and the exhibits
"therein referred to.

"The complainant also offered in evidence the admission of the
"defendant that it conducted the defense in the said suit of *Eagle Mfg.*
"*Co.* v. *David Bradley & Co.*; and also a copy of letters patent No.
"226,833, to B. C. Bradley, dated April 27, 1880; and thereupon the
"complainant announced that its case was closed.

"The defendant herein hereby consents to the foregoing proceed-
"ings."

Under such stipulation the complainant offered and read in evidence the final decree of the Circuit Court of the United States for the Southern District of Iowa, in the case referred to, as follows:

"This case coming on for hearing on October 15, 1889, being the
"first day of the May term of said court, on the report of the master,

"and thereupon, in addition to the matters adjudged and decreed in the "decree hereinbefore rendered on May 23, 1888, it is now ordered, "adjudged and decreed that the report of the master be confirmed, and "that the complainant have and recover of the defendant the sum of "one cent nominal damages, and the costs of the reference to the master "to be taxed."

The answer in this cause asserts that the defendant, appellant here, is now constructing, selling, and using cultivators which are exactly the same as those sold by David Bradley and Co.; that such cultivators are manufactured under and in accordance with letters patent of the United States, No. 243,123, dated June 21, 1881, granted to Charles A. Hague, and No. 270,629, dated January 16, 1883, granted to Byron C. Bradley. It also asserts the invalidity of the appellee's patent for want of novelty, and that the invention was anticipated by certain letters patent specifically stated. These defenses were pleaded to the suit of this appellee against David Bradley & Co. See *Eagle Manufacturing Company* v. *Bradley*, 35 Fed. R., 295. The defenses here and there are substantially the same, except that here, in addition to the assertion of the patent to Dalton, common to the defenses in both suits, prior knowledge and use by Dalton is asserted independently of his patent. It is not claimed, however, that such use and knowledge goes further than the patent to him pleaded and considered by the court in the Iowa suit. There is this further exception that by an amendment to the answer here the appellant alleged prior use by "Charles A. Hague at Chicago, in the shops of the Furst & Bradley Manufacturing Company, now the David Bradley Manufacturing Company," in addition to the prior use asserted therefore in the answers both in the case here and in the suit in the Southern District of Iowa. The Hague patent was, however, asserted in the answer in the Iowa suit as one of the patents under which the appellant's cultivators were manufactured.

The court below entered an interlocutory decree for the complainant, containing the usual direction for an injunction, upon the ground that the decree in the Iowa case was binding upon the defendant, and precluded it from further contesting the validity of the complainant's patent. *Eagle Manufacturing Company* v. *Bradley Manufacturing Company*, 50 Fed. R., 193. The present appeal involves the correctness of that ruling.

JENKINS, *District Judge.*

The general rule that a judgment or decree of a court of competent jurisdiction between two parties is conclusive in any other suit between them, or their privies, of every matter that was decided therein, and that was essential to the decision made, is not here called in question. It is objected, however, that the rule ought not to govern here because, *First*, the decree in the suit in the Southern District of Iowa was, at the bring-

ing of this suit, interlocutory and not final and is not therefore *res adjudicata*. *Second*, the appellee has failed by supplemental bill, or otherwise, to plead the final decree in the former suit, and the record thereof was therefore improperly allowed in evidence. *Third*, that the appellee has by stipulation expressly waived its right to assert the former recovery, and *Fourth*, that a new defense not involved in the former case is here asserted.

I. The suit in the Circuit Court of the United States for the Southern District of Iowa, was brought to restrain the infringement of the same claims of the same patent here in question. The defendant there was the agent of the present appellant in the sale of the infringing machines. The defense of the suit there was assumed and prosecuted by the appellant here. The appellant was in fact the real party to that litigation, and, so far as the decree there is *res adjudicata*, is as effectively concluded thereby as if it were the actual defendant in the record.

Lovejoy v. *Murray*, 3 Wall., 1, 18,19.
Robbins v. *Chicago*, 4 Wall., 657,672.

That the decree was interlocutory at the bringing of this suit, and subsequently ripened into a final decree does not impair its efficacy or conclusiveness when properly presented in this suit. The relative time of institution of suit, or the relative date of final decree, is not of consequence if the merits of the controversy be thereby fully and finally determined and the record thereof is properly brought to the attention of this court.

Duffy v. *Lytle*, 5 Watts, 120.
Casabeer v. *Mowry*, 55 Pa. St. 422.
Child v. *Eureka Powder Works*, 45 N. H. 547.

II. It is doubtless necessary, where special pleading is required, that a former recovery should be pleaded in bar. There are cases where the record of a former recovery can be given in evidence without being specially pleaded. But this case is not one of them. We are therefore to enquire whether the allegations contained in the bill are sufficient to admit the record, and whether any objection to its admission was laid upon failure to properly plead the former recovery. For, if the record be properly before us in evidence, although not well pleaded, we are not at liberty to consider it, but are bound to give full effect to it.

The bill in apt terms pleads the former suit and the interlocutory decree rendered therein. Whether the pleader so charged it in the bill with the view to invoke the doctrine of comity, or as a supposed bar to an apprehended attack upon the validity of the patent, we cannot say. If the latter, it may be doubted whether it would not better accord with correct principles of equity pleading to assert a former recovery in bar by

replication or special plea. However that may be, the decree pleaded was not technically well pleaded as a bar, because, being interlocutory, while it affirmed the validity of the patent and the fact of infringement, it still remained in the breast of the Chancellor and was subject to change. But the appellant was advised by the bill that the interlocutory decree was relied upon by the appellee as a protection against further attack upon the patent in question, and no exception to the matter in the bill was taken. The object of all pleading is to fitly advise an opponent of the particular charges or defenses relied upon, that he may be prepared to meet the particular matter, and not be taken by surprise. Here the appellant—so far as respects the interlocutory decree—was not only fully apprized of the position of its opponent, but by its answer and stipulation conceded the facts charged and objected only to the decree that in rendering such judgment the court erred through failure to understand the operation of the Dalton machine, asserted to anticipate the invention of the appellee. While, therefore, the bill did not, in the view of strict pleading, present the issue of a former recovery because it did not allege, what did not at the time exist, the formal final decree; still when that final decree was offered in evidence, it was properly allowed and should be considered, unless proper objection was made to its reception upon the particular ground that it had not been pleaded. *Walsh* v. *Colclough*, 9 U. S. App., 56 Fed. R., 778. It was encumbent upon the appellant by fit objection at the time, or by subsequent motion to expunge, to have informed its opponent of the precise ground of objection. The objection could then have been obviated by amendment to the bill or by proper supplemental pleading. It is too late to urge such objection for the first time upon an appeal.

It is to be further observed that the record of the final decree was introduced in evidence upon the consent of the appellant. The language of the stipulation is, "The defendant, though not appearing, consented in writing to the introduction of said proofs in so far as the same are material." The stipulation covers four distinct matters allowed in evidence without other objection than that stated. The evident meaning of the stipulation is, that the matters offered should all be received in evidence, subject only to the question of their bearing upon the merits of the controversy. It was a waiver, in our opinion, of all formal objection. Materiality means "the property of substantial importance or influence especially as distinguished from formal requirement."—*Bouvier*. "Substantial as opposed to formal."—*Johnson*. It is clear to our minds that the only reservation made in the stipulation was the question of the influence of the evidence upon the controversy between the parties; whether the evidence tendered was of substance as affecting the matter in dispute. The stipulation ignores all formal requirements, all technical objections with respect to pleading. We conclude, therefore, that the final decree is properly in evidence, and should be considered and given in proper effect.

III. We are of opinion that the third objection, that the bar of a former recovery has been waived is not tenable.

All that remained to give full and final effect to the interlocutory decree of May 23, 1888, was the ascertainment of the damages and the formal entry of final decree. This bill was filed June 11, 1888. On the 25th September, 1889, the parties stipulated that in the suit in the Southern District of Iowa the master should report that the complainant (the appellee here) had brought suit against the manufacturer (the appellant here) of the infringing machines in controversy in that suit, "electing to recover in full of said manufacturer all profits and damages arising from the sales by the defendant herein, as well as other profits and damages, and for that reason will offer no proof of profits and damages in the cause," and that the master should report nominal damages against the defendant there; which was done. The stipulation further provided that the action of the court upon such report, "shall not be claimed by said David Bradley Manufacturing Co. to be a bar to the recovery by the Eagle Manufacturing Co. of the said David Bradley Manufacturing Co., of all damages and profits, if any, arising from the sale of the cultivator by the said David Bradley & Co., in violation of the letters patent 242,497, to E. A. Wright, and by him assigned to the Eagle Manufacturing Co." We cannot perceive that this stipulation has legal effect to waive the conclusiveness of the Iowa decree upon the validity of the patent and its infringement. The interlocutory decree had determined those questions; conclusively so when by final decree the matter was no longer at large. That would result, whatever the *quantum* of damages awarded. In the light of the situation of the parties at the time, the object and force of the stipulation is obvious. The validity of the patent, and its infringement, had been contested and determined against the agents of the appellant for the sale of its machines. The appellant had assumed the defense of that suit and was defeated. It was equally, with its agents, the defendant in that suit, liable for all damages sustained. If the nominal defendant had ignorantly infringed, being employed to do it, there was a certain equity that only nominal damages should be exacted, reserving to the appellee recourse to the more guilty infringer, the manufacturer. The appellant had, immediately upon the rendering of the interlocutory decree, instituted this suit to recover damages of the manufacturer for all damages sustained, whether by reason of the manufacture and sale of the machines in that suit adjudged to infringe, or of others. It was but just under such circumstances that substantial damages should be sought of the guilty manufacturer, rather than of a possibly innocent agent. Such proceeding was also in the way of economy in litigation. It was assumed that that course could be safely pursued, if by stipulation the manufacturer would waive the bar of a decree entered for nominal damages, and permit a recovery to be sought in this suit for the actual damages sustained by reason of the manufacture and sale of the infringing machines involved in that suit. The stipulation speaks that object and no other. It contains no intimation that the decree should be at large

In *Davis* v. *Brown*, 94 U. S., 423, two of a series of notes had passed into judgment upon the sole defense by the endorsers that they had not been legally charged as such. In a second suit upon certain other notes of the series, the defense was asserted of an agreement by the plaintiff not to hold them liable for or to sue them upon their endorsements. The court held the former judgment not to be *res adjudicata* upon the new defense asserted to a different demand, saying by Mr. Justice Field (page 428):

"When a judgment is offered in evidence in a subsequent action "between the same parties upon a different demand, it operates as an "estoppel only upon the matter *actually at issue* and determined in the "original action; and such matter, when not disclosed by the pleadings, "must be shown by extrinsic evidence."

In *Campbell* v. *Rankin*, 99 U. S., 261, 263, the doctrine is thus stated by Mr. Justice Miller:

"Whatever may have been the opinion of other courts, it has been "the doctrine of this court in regard to suits on contract ever since the "case of the *Washington, Alexandria & Georgetown Steam Packet Com-* "*pany* v. *Sickles* (24 How. 333), and in regard to actions affecting real "estate since *Miles* v. *Caldwell* (2 Wall. 35), that whenever the same "question has been in issue and tried, and judgment rendered, it is con- "clusive of the issue so decided in any subsequent suit between the same "parties; and also, that where, from the nature of the pleadings, it would "be left in doubt on what precise issue the verdict or judgment was rend- "ered, it is competent to ascertain this by parol evidence on the second "trial. The latest expression of the doctrine is found in *Cromwell* v. "*County of Sac*, 94 U. S., 351; *Davis* v. *Brown*, id. 423."

In *Block* v. *Commissioners*, 99 U. S., 686, 693, Mr. Justice Strong asserts the doctrine as follows:

"Now, that a judgment in a suit between two parties is conclusive "in any other suit between them, or their privies, of every matter that "was decided therein, and that was essential to the decision made, is a "doctrine too familiar to need citation of authorities in its support. A "few cases go further, and rule that it is conclusive of matters incident- "ally cognizable, if they were in fact decided. To this we do not assent. "But it is certain that a judgment of a court of competent jurisdiction is "everywhere conclusive evidence of every fact upon which it must neces- "sarily have been founded."

In *Wilson's Executor* v. *Deen*, 121 U. S., 525,532, Mr. Justice Field re-states the principle thus:

"In *Cromwell* v. *County of Sac*, 94 U. S., 351, we considered at "much length the operation of a judgment as a bar against the prosec- "tion of a second action upon the same demand, and as an estoppel upon "the question litigated and determined in another action between the "same parties upon a different demand; and we held, following in this "respect a long series of decisions, that in the former case the judgment, "if rendered upon the merits, is an absolute bar to a subsequent action, "a finality to the demand in controversy, concluding parties and those in "privity with them; and, that in the latter case, that is, where the second "action between the same parties is upon a different demand, *the judg-* "*ment in the first action operates as an estoppel as to those matters in issue,* "*or points, controverted, upon the determination of which the finding or* "*verdict was rendered.*"

In *Bissell* v. *Spring Valley Township*, 124 U. S., 225, 231, Mr. Justice Field again re-states the doctrine as held by the court, in clear and unequivocal language, as follows:

"In *Cromwell* v. *County of Sac*, 94 U. S., 351, we drew a distinc- "tion between the effect of a judgment as a bar or estoppel against the "prosecution of a second action upon the same claim or demand, and its "effect as an estoppel in another action between the same parties upon a "different claim or demand. In the latter case, which is the one now "before us, we held, following numerous decisions to that effect, that the "judgment in the prior action operates as an estoppel only as to those "matters in issue, or points, controverted, upon the determination of "which the finding or verdict was rendered. The inquiry in such case, "therefore, we said, must always be as to the point or question *actually* "*litigated and determined* in the original action, for only upon such mat- "ters is the judgment conclusive in another action between the parties "upon a different demand. *Lumber Co.* v. *Buchtel*, 101 U. S., 638; "*Wilson's Executor* v. *Deen*, 121 U. S., 525."

The rule thus settled has been reiterated by the court in *Nesbit* v. *Riverside Independent District*, 144 U. S., 610, 618. *Wilmington & Weldon Railroad* v. *Alsbrook*, 146 U. S., 279, 302. *McComb* v. *Frink*, 149 U. S., 629, 641.

In the sense that the present suit is prosecuted for an infringement not involved in the prior adjudication, the demand is not the same. But that, we think, is not the proper criterion. The inquiry should be directed to the question whether the right asserted by the party as the foundation of this suit, is the same right determined by the previous action. For, if the former test should prevail as the standard, a patentee could never be precluded from asserting the validity of his patent against subsequent infringements by the one who had by previous judgment obtained adjudication against its validity. The former recovery in such case

would be conclusive only that the particular devices there involved did not infringe. The question of the validity of the patent would thus forever remain at large, without conclusive determination. We are of opinion, therefore, that this suit is upon the same claim and demand, to-wit: The patent that was involved and determined in the former suit. That this must be so appears clearly from an examination of the cases cited. Thus in *Wilson's Executor* v. *Deen*, *supra*, the lessor brought action for rental under a lease; the defense was that of fraud in procuring the lease and judgment passed for the defendant. In another action between the same parties for rental subsequently accruing under the same lease, the former recovery was pleaded in bar, against which it was urged that the demand was not identical, and *Cromwell* v. *County of Sac*, was invoked to sustain that position. The court, however, sustained the plea, saying of the former judgment that "it determined not merely for that case, but for all cases between the same parties, not only that there was nothing due for the rent claimed for the month of December, 1873, *but that the lease itself was procured by fraud and therefore void.*" The court cites with approval the case of *Gardner* v. *Buckbee*, 3 Cowen, 120, where two notes were given upon the sale of a vessel. In an action upon one of the notes the maker pleaded fraud in the sale, and a total failure of consideration, and judgment was rendered in his favor. In an action upon the other of the notes the record of the judgment in the former suit was offered in evidence in bar of the action. The Supreme Court held the judgment conclusive. Instances might be multiplied of like adjudications. We deem it only necessary to refer to, without enlarging upon, the following cases:

Lumber Co. v. *Buchtel*, 101 U. S., 638. *Life Insurance Co.* v. *Bangs*, 103 U. S., 780. *Elgin* v. *Marshall*, 106 U. S., 578, 579.

We are compelled, therefore, to the conviction that this suit falls within the first resolution in *Cromwell* v. *County of Sac*, namely, that it is the second action upon the same claim or demand, to-wit: Upon the claim for a monopoly granted by patent; and that the former decree, the question being necessarily involved and at issue in that cause, determines conclusively and for all time, as between the parties thereto and their privies, the validity of the patent. It can no more be made the subject of contention between them.

Nor do we apprehend the result could be different if the case could be held to fall within the second resolution of *Cromwell* v. *County of Sac*. If this suit can be construed upon a different claim or demand, because the alleged infringement was in the use of machines not involved in the former suit, still the prior decree would be conclusive upon the matters at issue essential to a recovery, and actually determined in such action. The validity of the patent was there at issue. Its invalidity was claimed, because, as there asserted, certain specified prior patents described the same invention, and because of prior use. The determination of the issue of invalidity was essential to any decree for the complainant in that

cause and was determined by the judgment. It is said here that the prior patent to Dalton, and prior use by Hague here asserted, was not then at issue. The Dalton patent was distinctly passed upon by the court, and was held unavailing to defeat the invention claimed. As to the alleged prior use by Hague, it may be said that it was in the prior suit alleged by the defendant with the sanction of the present appellant, that the cultivators complained of as infringing, were manufactured under the letters patent to Hague of June 21, 1881. This patent was some two weeks subsequent in date to the complainant's patent, and was held to infringe. Prior use by Hague may not have been specifically alleged, but the defendant there attacked the validity of the patent because of prior use and of anticipation by other patents.

It was a duty to have asserted all anticipating patents, and all prior use. The issue of the pleadings was novelty of invention. The testimony of prior use and of anticipatory patents bore upon the issue of novelty of invention. In a suit at law such issue is tendered by a plea of the general issue, and such evidence may be given thereunder upon giving a certain notice. So in a suit in equity, like defense of invalidity may be pleaded, "*and proofs of the same may be given upon like notice in the answer of the defendant and with the like effect.*" *R. S. Sec.* 4920. The statement so required of particular anticipating patents, and of prior use, is clearly a mere bill of particulars of evidence to establish the issue of want of novelty; not independent issues. So no new defense is here asserted. The matter charged is merely additional evidence in support of the issue presented and determined in the former suit. It was competent evidence in that suit without any statement of it in the pleading, if the objection of the statute was not timely urged. *Loom Company* v. *Higgins*, 105 U. S., 580. *Zanes* v. *Soffe*, 110 U. S., 200, 203.

The proposed evidence comes too late to be availing. The decree of a court is not the less conclusive because a party has failed to produce all the evidence at command, or because of newly discovered evidence. *Expedit reipublicae ut sit finis litium.*

The decree will be affirmed.

— IN THE —

UNITED STATES CIRCUIT COURT OF APPEALS,

FOR THE SEVENTH JUDICIAL CIRCUIT.

The David Bradley Manufacturing Company,
Appellant,
v.
The Eagle Manufacturing Company.

Moline Plow Company,
Appellant,
v.
The Eagle Manufacturing Company.

JENKINS' *Circuit Judge.*

The appellants present petitions for rehearing, principally upon the ground that we erred in holding that the former decree could be here considered. This proposition is predicated upon the ground that the former decree was not pleaded ; and it is insisted that we have overlooked the rule that no decree can be made in favor of the complainant on grounds not stated in his bill.

The case of *Crockett* v. *Lee*, 7 Wheaton, 522, is supposed by counsel to be decisive against our decision. There, the case below turned principally on the question whether a certain location was too vague to be supported. And it was insisted upon appeal that the decree was erroneous, because the court should have disregarded the testimony in that respect, for the reason that neither its vagueness nor its certainty had been put in issue by the pleadings; and the court so held. But that court, recognizing the injustice of permitting parties to try and submit their cause in the court below upon an issue not raised by the pleadings, and to enter that objection for the first time upon appeal, while feeling bound to assert the rule, was very careful to find a ground upon which to reverse the cause, with direction to permit the parties to amend their pleadings. This case was decided in 1822. It is within the knowledge of the profession that at that time, both in law and in equity, great stress was laid upon strict adherence to the issues presented by the pleadings, and to a technical conformity of proof to allegation. It was carried to the extreme of

injustice. Since that time there has been evolution in the science of the law in respect of that subject. Parties are no longer turned out of court because their *i's* are not dotted, or their *t's* crossed; and courts are diligent rather to search for the substantial justice of a case, than to insist upon strict conformity to pleading. And, while the rule remains, courts at the present day are not inclined to permit parties, for the first time upon appeal, to assert the objection that the testimony, which has been taken without objection in the court below, supports an issue not comprehended within the allegations of the pleading.

The Supreme Court of the United States has asserted this principle in the late case of the *Wasatch Mining Company* v. *Crescent Mining Company*, 148 U. S., 293, 298, 300, where a similar objection is disposed of upon the ground that the defendant did not object to the plaintiff's evidence as exhibiting a different case from that asserted in the bill, and that the Supreme Court of the Territory from which the cause came justly held that the objection should have been raised in the trial court, where ample power existed to correct and amend pleadings; and not having done so, but having gone to trial on the merits, the defendant was precluded from assigning error for matter so waived. The doctrine of waiver is thus invoked to mitigate the hardship of the rule if it should be applied to cases where parties without objection have made the issue by their evidence.

The issue here was novelty of invention. The prior interlocutory decree was pleaded, either as a bar, or as matter more or less conclusive upon the question of novelty, or perhaps in invocation of the doctrine of comity. It is immaterial which. If as a bar the pleading was defective upon the technical ground that the interlocutory decree had not ripened into a final decree, because the damages had not then been assessed. The validity of the patent had been determined, subject only to the power of the court to change its judgment before final decree. No objection was made to the sufficiency of the pleading when the final decree was stipulated in evidence. We are well satisfied that thereby the appellant waived the defective nature of the pleading, if the pleading is to be treated as a plea of *res adjudicata*.

Irrespective, however, of any question of pleading, we are of opinion that the former decree was properly before the court, and should be given full effect. The issue involved in this case was novelty of the invention claimed. The former decree was, as has been said, stipulated in evidence by the agreement of the parties, subject only to its materiality. A former decree may be good as a plea in bar, or may be available as evidence. It was said in the *Duchess of Kingston's* case, II *State Trials*, 261, 2 Smith Lead Cas., 6th Am. Ed., 663, that such decree is "as a plea, a bar, or as evidence, conclusive." It may, perhaps, be somewhat questionable whether it is correct to say that a party is estopped by a judgment any more than that he is estopped by a contract. The former decree is not the act of the party, but the solemn adjudication of a judicial tribunal. So far as the party is concerned, he may be permitted to waive the former

recovery in his own behalf; but the peace and good order of society are likewise concerned that there shall be an end to litigation, and that the courts should not be twice vexed with the same controversy, when that controversy has once been solemnly adjudicated. *Marsh* v. *Pier*, 4 Rawle, 288; *Kilheiffer* v. *Kerr*, 7 Sarg. & Rawle, 319.

However that may be, it is certainly true that, without respect to pleading, wherever a former recovery is properly in evidence—as here it was by agreement of the parties—full effect should be given to it, so far as it bears upon the issue presented. The issue here being novelty of invention, and that fact having been determined by the prior adjudication, the former decree becomes conclusive evidence of the validity of the patent, as between the parties effected by such prior adjudication.

The petition for rehearing will be overruled.

MONDAY, June 12, 1892.

Present: Honorable JOHN M. HARLAN,
Circuit Justice.
Honorable WALTER Q. GRESHAM,
Circuit Judge.
Honorable WILLIAM A. WOODS,
Circuit Judge.

22. David Bradley Manufacturing Company,
v.
The Eagle Manufacturing Company,

It is ordered by the court that the hearing of this cause be, and it is hereby, continued until next term.

SATURDAY, October 1, 1892.

Present: Honorable WALTER Q. GRESHAM,
Circuit Judge.
Honorable WILLIAM A. WOODS,
Circuit Judge.
Honorable JAMES G. JENKINS,
District Judge.

22. David Bradley Manufacturing Company,
v.
The Eagle Manufacturing Company.

It is ordered by the court that this cause be, and is hereby, set down for hearing for the 6th day of October, 1892.

THURSDAY, October 6, 1892.

Present: Honorable WALTER Q. GRESHAM,
Circuit Judge.
Honorable WILLIAM A. WOODS,
Circuit Judge.
Honorable JAMES G. JENKINS,
District Judge.

22. David Bradley Manufacturing Company,
v.
The Eagle Manufacturing Company.

Now this day came the parties by their counsel and this cause having been partly heard upon the printed record and briefs of counsel and upon oral argument of counsel the further hearing thereof is postponed until to-morrow morning.

FRIDAY, October 7, 1892.

Present: Honorable WALTER Q. GRESHAM,
Circuit Judge.
Honorable WILLIAM A. WOODS,
Circuit Judge.
Honorable JAMES G. JENKINS,
District Judge.

22. David Bradley Manufacturing Company,
v.
The Eagle Manufacturing Company.

Now, again, came the parties by their counsel this day and this cause having been heard to conclusion upon the printed record and briefs of counsel and upon oral arguments of counsel the court takes this matter under advisement.

FRIDAY, October 6, 1893.

Present: Honorable WILLIAM A. WOODS,
Circuit Judge.
Honorable JAMES G. JENKINS,
Circuit Judge.

22. David Bradley Manufacturing Company,
v.
The Eagle Manufacturing Company.

Appeal from the Circuit Court of the United States for the Northern District of Illinois.

This cause came on to be heard on the transcript of the record from the Circuit Court of the United States for the Northern District of Illinois and was argued by counsel. On consideration whereof it is now here ordered, adjudged, and decreed by this court that the decree of the said Circuit Court in this cause be, and the same is hereby, affirmed with costs.

FRIDAY, December 8, 1893.

Present: Honorable WILLIAM A. WOODS,
Circuit Judge.
Honorable JAMES G. JENKINS,
Circuit Judge.

22. David Bradley Manufacturing Company,
v.
The Eagle Manufacturing Company.

It is ordered by the court that the petition for re-hearing in this cause be, and the same is hereby, overruled.

UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

I, Oliver T. Morton, clerk of the United States Circuit Court of Appeals for the Seventh Circuit, do hereby certify that the foregoing pages contain a true copy of the transcript of the record as brought to this court by an appeal and the proceedings in this court in the case of David Bradley Manufacturing Company *v.* The Eagle Manufacturing Company, No. 22, October Term, 1891, as the same remains upon the files and records of said United States Circuit Court of Appeals for the Seventh Circuit.

In testimony whereof I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit at the city of Chicago this 11th day of January, A. D. 1894.

[SEAL.] OLIVER T. MORTON,
Clerk of the United States Circuit Court of Appeals for the Seventh Circuit.